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THAI
Thai Airways International Public Company Limited

BOEING 787
MINIMUM EQUIPMENT LIST
(MEL)

Revision 15

APPROVED BY

THE CIVIL AVIATION AUTHORITY OF THAILAND

(Suttipong Kongpool)
Director General
The Civil Aviation Authority of Thailand

DATE OF APPROVAL ......11 April 2024...

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ที่ กพท ๐๕/๓๓๗๐

สำนักงานการบินพลเรือนแห่งประเทศไทย
๒๒๒ ซอยวิภาวดีรังสิต ๒๘
ถนนวิภาวดีรังสิต แขวงจตุจักร
เขตจตุจักร กรุงเทพมหานคร ๑๐๙๐๐

๑๑ เมษายน ๒๕๖๗

เรื่อง การรับรองรายการอุปกรณ์ขั้นต่ำที่ใช้งานได้ (Minimum Equipment List) Revision 15 Date 29 April 2024 สำหรับอากาศยานแบบ Boeing 787

เรียน ประธานเจ้าหน้าที่บริหาร บริษัท การบินไทย จำกัด (มหาชน)

อ้างถึง คำร้อง บริษัท การบินไทย จำกัด (มหาชน) ลงวันที่ ๗ มีนาคม ๒๕๖๗

สิ่งที่ส่งมาด้วย เอกสารรายการอุปกรณ์ขั้นต่ำที่ใช้งานได้ (Minimum Equipment List) Revision 15 Date 29 April 2024 สำหรับอากาศยานแบบ Boeing 787

ตามคำร้องที่อ้างถึง บริษัท การบินไทย จำกัด (มหาชน) ขอให้สำนักงานการบินพลเรือนแห่งประเทศไทย (กพท.) พิจารณารับรองรายการอุปกรณ์ขั้นต่ำที่ใช้งานได้ (Minimum Equipment List: MEL) Revision 15 Date 29 April 2024 สำหรับอากาศยานแบบ Boeing 787 ความละเอียดแจ้งแล้ว นั้น

กพท. พิจารณาแล้ว จึงให้การรับรอง MEL Revision 15 Date 29 April 2024 สำหรับอากาศยานแบบ Boeing 787 เพื่อให้บริษัทฯ ใช้เป็นแนวทางประกอบการปฏิบัติการบินและการบำรุงรักษาอากาศยานแบบดังกล่าวต่อไป ทั้งนี้ ได้จัดส่งเอกสาร MEL ตามสิ่งที่ส่งมาด้วย

จึงเรียนมาเพื่อทราบ

ขอแสดงความนับถือ

(นายสุทธิพงษ์ คงพูล)
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Thai Airways International Public Company Limited

TG 787 MEL Revision No:	15
has been developed based on	
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Date 10 APRIL 2024	Date 10 APRIL 2024

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BOEING 787
Minimum Equipment List
(MEL)

Revision No.: 15

Thai Airways International Public Company Limited

TOC TABLE OF CONTENTS TOC-1
PRE PREFACE PRE-1
Section 0 INTRODUCTION .... Section 0-1
Section 1 EICAS MESSAGES .... Section 1-1
Section 2 MINIMUM EQUIPMENT LIST (MEL) ITEMS .... Section 2-1
ATA 21 AIR CONDITIONING .... ATA 21-1
ATA 22 AUTOFLIGHT .... ATA 22-1
ATA 23 COMMUNICATIONS .... ATA 23-1
ATA 24 ELECTRICAL POWER .... ATA 24-1
ATA 25 EQUIPMENT/FURNISHINGS .... ATA 25-1
ATA 26 FIRE PROTECTION .... ATA 26-1
ATA 27 FLIGHT CONTROLS .... ATA 27-1
ATA 28 FUEL .... ATA 28-1
ATA 29 HYDRAULIC POWER .... ATA 29-1
ATA 30 ICE & RAIN PROTECTION .... ATA 30-1
ATA 31 INDICATING/RECORDING SYSTEMS .... ATA 31-1
ATA 32 LANDING GEAR .... ATA 32-1
ATA 33 LIGHTS .... ATA 33-1
ATA 34 NAVIGATION .... ATA 34-1
ATA 35 OXYGEN .... ATA 35-1
ATA 38 WATER/WASTE .... ATA 38-1
ATA 42 INTEGRATED MODULAR AVIONICS .... ATA 42-1

ATA 44 CABIN SYSTEMS ATA 44-1
ATA 45 CENTRAL MAINTENANCE COMPUTER ATA 45-1
ATA 46 INFORMATION SYSTEMS ATA 46-1
ATA 47 NITROGEN GENERATION SYSTEM ATA 47-1
ATA 49 AIRBORNE AUXILIARY POWER ATA 49-1
ATA 50 CARGO & ACCESSORY COMPARTMENTS ATA 50-1
ATA 52 DOORS ATA 52-1
ATA 57 WINGS ATA 57-1
ATA 73 ENGINE FUEL & CONTROL ATA 73-1
ATA 74 IGNITION ATA 74-1
ATA 75 BLEED AIR ATA 75-1
ATA 77 ENGINE INDICATING ATA 77-1
ATA 78 ENGINE EXHAUST ATA 78-1
ATA 79 ENGINE OIL ATA 79-1
ATA 80 STARTING ATA 80-1
Section 3 CONFIGURATION DEVIATION LIST (CDL) ITEMS Section 3-1
ATA 21 AIR CONDITIONING ATA 21-1
ATA 23 COMMUNICATIONS ATA 23-1
ATA 32 LANDING GEAR ATA 32-1
ATA 33 LIGHTS ATA 33-1
ATA 52 DOORS ATA 52-1
ATA 53 AFT WHEEL WELL BULKHEAD HEAT SHIELD ATA 53-1

ATA 55 STABILIZER .... ATA 55-1
ATA 56 WINDOWS .... ATA 56-1
ATA 57 WINGS .... ATA 57-1
ATA 71 POWER PLANT .... ATA 71-1
ATA 78 ENGINE EXHAUST .... ATA 78-1
Section 4 SPECIAL OPERATIONS .... Section 4-1

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Model Identification

General

The table below provides a list of airplanes in order of their delivery dates. Model designation, Line, Serial, and Fuselage numbers are supplied by the manufacturer of the airplanes.

No.	Model	Reg.	Name	Line No.	Serial/ Fuselage No.	Delivery Date
1.	787-8	HS-TQA	ONGKHARAK	190	35315/ZA588	16JUL14
2.	787-8	HS-TQB	CHATURAPHAK PHIMAN	209	35316/ZA589	15SEP14
3.	787-8	HS-TQC	PRAN BURI	226	36110/ZA590	29OCT14
4.	787-8	HS-TQD	WAPI PATHUM	244	35320/ZA591	09DEC14
5.	787-8	HS-TQE	KOSUM PHISAI	287	38757/ZA592	17APR15
6.	787-8	HS-TQF	KONG KRAILAT	331	38759/ZA593	09AUG15
7.	787-9	HS-TWA	PHATTHANA NIKHOM	602	38777/ZB219	14SEP17
8.	787-9	HS-TWB	PHROM BURI	623	38790/ZB220	30OCT17

Abbreviations

General

The following abbreviations may be found throughout the manual.

Some abbreviations may also appear in lowercase letters. Abbreviations having very limited use are explained in the chapter where they are used.

A	
A	At or Above
ABS	Absolute
ABV	Above
A/C	Air Conditioning
AC	Alternating Current
ACARS	Aircraft Communications Addressing and Reporting System
ACE	Actuator Control Electronics
ACM	Air Cycle Machines
ACP	Audio Control Panel
ACT	Active
ADF	Automatic Direction Finder
ADJ	Adjust
ADM	Air Data Module
ADRF	Air Data Reference Function
ADRS	Air Data Reference System
ADRU	Air Data Reference Unit
ADS-B	Automatic Dependant Surveillance–Broadcast
AED	Automatic External Defibrillator
AFDS	Autopilot Flight Director System
AFE	Above Field Elevation
AFM	Airplane Flight Manual (FAA approved)
AGCU	APU Generator Control Unit
AGL	Above Ground Level
AHRU	Attitude Heading Reference Unit
AI	Anti–Ice
AIL	Aileron
AIRB	Airborne
ALT	Altitude
ALTN	Alternate
AM	Amplitude Modulation
AMI	Airline Modifiable Information
ANP	Actual Navigation Performance
ANT	Antenna

A	
AOA	Angle of Attack
AOIP	ACARS-over-IP
A/P	Autopilot
APP	Approach
APT	Airport
APU	Auxiliary Power Unit
AR	Authorization Required
ARINC	Aeronautical Radio, Incorporated
ASG	APU Stater Generator
ASO	Airline Selectable Option
ASYM	Asymmetry
ATA	Actual Time of Arrival
ATC	Air Traffic Control
ATIS	Automatic Terminal Information Service
ATN	Aeronautical Telecommunications Network
ATP	Alerting and Transponder Control Panel
ATSP	Air Traffic Service Provider
ATT	Attitude
ATZ	Airport Traffic Zone
AUTO	Automatic
AUX	Auxiliary
AVAIL	Available
AVS	Alternate Ventilation System

B	
B	At or Below
BA	Bulletin Addendum
BARO	Barometric
BAT	Battery
BCRS or B/CRS	Back Course
BFO	Beat Frequency Oscillator
BITE	Built In Test Equipment
BLW	Below
BRG	Bearing
BRT	Bright
BTL DISCH	Bottle Discharge (fire extinguishers)

C	
C	Captain Celsius Center
CAAT	The Civil Aviation Authority of Thailand
CAB	Cabin
CAC	Cabin Air Compressor
CALC	Calculated
CANC/ RCL	Cancel/Recall
CAPT	Captain
CAS	Calibrated Airspeed
CB	Circuit Breaker
CBIC	Circuit Breaker Indication and Control
CCD	Cursor Control Device
CCR	Common Computing Resource
CCS	Common Core System or Cursor Control Selector
CDN	Common Data Network
CDTI	Cockpit Display of Traffic Information
CDU	Control Display Unit
CG	Center of Gravity
CHKL	Checklist
CHS	Cargo Handling System
CIPS	CAC Ice Protection System
CLB	Climb
CLR	Clear
CMF	Communication Management Function
CMSC	Common Motor Start Controller
CO	Company
COMM	Communication
CON	Continuous
CONFIG	Configuration
CORR	Corrected
CPCS	Cabin Pressure Control System
CRS	Course
CRZ	Cruise
CSOS	Customer Specific Option Selections
CTL	Control
CTR	Center
CTRL	Control
CVR	Cockpit Voice Recorder

D	
DA(H)	Decision Altitude (Height)
DC	Direct Current
D/D	Drift Down
DDG	Dispatch Deviations Guide
DECR	Decrease
DEL	Delete or Deleted
DEP ARR	Departure Arrival
DES	Descent
DEST	Destination
DIR	Directory or Direct or Direction
DISC	Disconnect
DIST	Distance
DLR	Datalink Recorder
DME	Distance Measuring Equipment
DN	Down
DSP	Display Select Panel
DSPL	Display
DTG	Distance To Go
DU	Display Unit

E	
EBA	Electric Brake Actuator
EBAC	Electric Brake Actuator Controller
ECB	Electronic Circuit Breaker
ECL	Electronic Checklist
ECON	Economy
ECS	Environmental Control System
ECV	Economy Cooling Valves
E/D	End of Descent
EDAS	Empennage Door Actuation System
EDP	Engine Driven Pumps
E/E	Electrical and Electronic
EEC	Electronic Engine Control
EFB	Electronic Flight Bag
EFC	Expected Further Clearance
EFIS	Electronic Flight Instrument System
EGT	Exhaust Gas Temperature
EICAS	Engine Indication and Crew Alerting System
ELEC	Electrical
ELEV	Elevator
ELT	Emergency Locator Transmitter
EMA	Elector-Mechanical
EMER	Emergency
EMG	Emergency
EMK	Emergency Medical Kit
EMP	Electric Motor Pump
ENG	Engine
EO	Engine Out
EST	Estimated
ETA	Estimated Time of Arrival
ETOPS	Extended Operations
EVAC	Evacuation
EXEC	Execute
EXT	Extend or External

F	
F	Fahrenheit
FA	Final Approach
FAA	Federal Aviation Administration
FAC	Final Approach Course
FAF	Final Approach Fix
FAK	First Aid Kit
FCM	Flight Control Modules
FCOM	Flight Crew Operations Manual
FCTL	Flight Control
F/D	Flight Director
FD	Flight Deck
FDR	Flight Data Recorder
FF	Fuel Flow
FIS	Flight Information Services
FL	Flight Level
FLCH	Flight Level Change
FLPRN	Flaperon
FLT	Flight
FLT DIR	Flight Director
FMA	Flight Mode Annunciation
FMC	Flight Management Computer
FMS	Flight Management System
F/O	First Officer
FPA	Flight Path Angle
FPM	Feet Per Minute
FPV	Flight Path Vector
FQDC	Fuel Quantity Data Concentrator
FR	From
FT	Feet
FWD	Forward

G	
G	Gravity
GA	Go–Around
GATU	Galley Autotransformer Unit
GBAS	Ground–Based Augmentation System
GCB	Generator Control Breaker
GEN	Generator
GLS	GBAS Landing System
GMM	General Maintenance Manual
GND	Ground
GNSS	Global Navigation Satellite System
GP or G/P	Glidepath
GPS	Global Positioning System
GPWS	Ground Proximity Warning System
GR WT	Gross Weight
G/S	Glideslope
GS	Groundspeed
GTK	Ground Track

H	
HAA	Height Above Airport
HBB	Hot Battery Bus
HCM	Hydraulic Control Module
HDG	Heading
HDG REF	Heading Reference
HDG SEL	Heading Select
HF	High Frequency
HLFC	Hybrid Laminar Flow Control
HPA	Hectopascals
HR	Hour
HT	Height
HUD	Head-Up Display
H/WIND	Head Wind
HXBV	Heat Exchanger Bypass Value
HYD	Hydraulic

I	
IAN	Integrated Approach Navigation
IAS	Indicated Airspeed
ICAO	International Civil Aviation Organization
ICI	Ice Crystal Icing
ICS	Integrated Cooling System
IDENT	Identification
IFE	In-Flight Entertainment System
IFR	Instrument Flight Rules
IGS	Instrument Guidance System
ILS	Instrument Landing System
IN	Inches
INBD	Inboard
INCR	Increase
IND LTS	Indicator Lights
INFO	Information
INIT	Initialize or Initialization
INOP	Inoperative
INR	Integrated Navigation Receiver (Radio)
INT	Interphone
INTC CRS	Intercept Course
IP	Internet Protocol
IRS	Inertial Reference System
IRU	Inertial Reference Unit
ISA	International Standard Atmosphere
ISFD	Integrated Standby Flight Display
ISLN	Isolation
ITP	In Trail Procedure

K	
K	Knots
KG or KGS	Kilograms
KIAS	Knots Indicated Airspeed
KTS	Knots

L	
L	Left
L1	Left #1
L2	Left #2
LAM	Landing Attitude Modifier
LAT	Latitude
LB or LBS	Pounds
LCD	Liquid Crystal Display
LDA	Localizer-Type Directional Aid
LDG	Landing
LDG ALT	Landing Altitude
LED	Light Emitting Diode
LF-ULD	Low Frequency Underwater Locating Device
LIM	Limit
LNAV	Lateral Navigation
LOC	Localizer
LONG	Longitude
LRC	Long Range Cruise
LRU	Line Replaceable Unit
LSK	Line Select Key
LVL	Level
LWR CTR	Lower Center
LWR DSPL	Lower Display

M	
M	Mach
MAC	Mean Aerodynamic Chord
MAG	Magnetic
MAN	Manual
MAX	Maximum
MCG	Minimum Control Ground
MCP	Mode Control Panel
MCS	Miscellaneous Cooling System
MDA(H)	Minimum Descent Altitude (Height)
MEDC	Main Engine Data Concentrator
MEL	Minimum Equipment List
MFD	Multifunction Display
MFK	Multifunction Keypad
MHZ	Megahertz
MIC	Microphone
MIN	Minimum
MISC	Miscellaneous
MKR	Marker Beacon
MM	Millimeters
MMO	Maximum Operating Mach
MOD	Modify
MSA	Modal Suppression Accelerometers
MSG	Message
MSL	Mean Sea Level
MTRS	Meters

N	
N	Normal
N1	Low Pressure Rotor Speed
N2	High Pressure Rotor Speed (General Electric engines) or Intermediate Pressure Rotor Speed (Rolls–Royce engines)
N3	High Pressure Rotor Speed (Rolls-Royce engines)
N/A	Not Applicable
NAV	Navigation
NAV RAD	Navigation Radio
ND	Navigation Display or Nose Down
NEF	Non-Essential Equipment and Furnishings
NGS	Nitrogen Generation System
NM	Nautical Miles
NO	Number
NORM	Normal
NPS	Navigation Performance Scales
NU	Nose Up

O	
OAT	Outside Air Temperature
OBS	Observer
ODS	Overheat Detection System
OFAR	Overhead Flight Attendant Rest
OFCR	Overhead Flight Crew Rest
OMB	Flight Crew Operations Manual Bulletins
OMS	Onboard Maintenance System
OMTS	Onboard Mobile Telephone System
OP	Operational
OPC	Operational Program Configuration
OPT	Optimum Altitude Onboard Performance Tool
OUTBD DSPL	Outboard Display
OVHD	Overhead
OVRD	Override

P	
PA	Passenger Address
PAN	Possible Assistance Needed
PASS	Passenger
PCS	Power Conversion System
PD	Performance Dispatch
PDU	Power Drive Unit
PECS	Power Electronics Cooling System
PED	Personal Electronic Device
PERF	Performance
PERF INIT	Performance Initialization
PF	Pilot Flying
PFC	Primary Flight Computers
PFD	Primary Flight Display
PG	Page
PI	Performance Inflight
PM	Pilot Monitoring
PMA	Permanent Magnet Alternator
PMG	Permanent Magnet Generator
PNL	Panel
POS	Position
POS INIT	Position Initialization
PPDS	Primay Power Distribution System
PRED	Predicted
PREV	Previous
PRI	Primary
PROC	Procedure
PROG	Progress
PRSOV	Pressure Regulating and Shutoff Valves
PRV	Pressure Regulating Valves
PSI	Pounds per Square Inch
PSU	Passenger Service Unit
PTH	Path
PTT	Push-To-Talk
PWS	Predictive Windshear System

Q	
QFE	(altitude above station)
QNH	(altitude above sea level)
QRH	Quick Reference Handbook
QTY	Quantity
QUAD	Quadrant

R	
R	Right
R1	Right #1
R2	Right #2
RA	Radio Altitude or Resolution Advisory
RAD	Radio
RAT	Ram Air Turbine
RCD	Record
RECIRC	Recirculation
RECMD	Recommended
REF	Reference
REL	Relative
RESTR	Restriction
RET	Retract
REV	Reverser
RF	Refill or Radius to Fix
RFMC	Ram Fan Motor Controller
RLS	Remote Light Sensor
RNAV or RNV	Area Navigation
RNP	Required Navigation Performance
RPDU	Remote Power Distribution Unit
RPTG	Reporting
RTA	Required Time of Arrival
RTE	Route
RVSM	Reduced Vertical Separation Minimum
RW or RWY	Runway

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S	
SAT	Static Air Temperature or Satellite
SATCOM	Satellite Communication System
S/C	Step Climb
SDF	Simplified Directional Facility
SEL	Select
SELCAL	Selective Calling System
SEP	Separation
SID	Standard Instrument Departure
SL	Sea Level
SLOP	Strategic Lateral Offset Procedure
SPD	Speed
SPU	Start Power Unit
SRM	Structural Repair Manual
STA	Station
STAB	Stabilizer
STAR	Standard Terminal Arrival Route
STAT	Status
STBY	Standby
STD	Standard
SUPP	Supplemental
SURF	Surface Traffic
SVR	Severe
SYS	System

T	
T	True or Turbulence
TA	Traffic Advisory
TAI	Thermal Anti Ice
TAMS	Thrust Asymmetry Minimum Speed
TAP	Thrust Asymmetry Protection
TAS	True Airspeed
TAT	Total Air Temperature
TBC	The Boeing Company
TBD	To Be Determined
TBV	Transient Bleed Valve
T/C	Top of Climb
TCAS	Traffic Alert and Collision Avoidance System
TCB	Thermal Circuit Breaker
TCP	Tuning and Control Panel
T/D	Top of Descent
TEMP	Temperature
TERR	Terrain
TFC	Traffic
TGT	Target
THR	Thrust
TO	Takeoff
TO/GA	Takeoff/Go–Around
TOGW	Takeoff Gross Weight
TOT	Total
TPR	Turbofan Power Ratio
TRANS	Transition
TRK	Track
TRU	True (reference to True North)
TTG	Time To Go
TWIP	Terminal Weather Information for Pilots

U	
UL	Up Link
UNAVAIL	Unavailable
UNLKD	Unlocked
UPR DSPL	Upper Display
USB	Upper Side Band
UTC	Universal Time Coordinated

V	
V1	Takeoff Decision Speed
V1V2	Volume 1, Volume 2
V2	Takeoff Safety Speed
VA	Design Maneuvering Speed
VAR	Variation
V/B	Vertical Bearing
VCTU	Variable Camber Trim Unit
VDL	VHF Digital Link
VERT	Vertical
VFR	Visual Flight Rules
VFSG	Variable Frequency Stater/Generator
VHF	Very High Frequency
VMBE	Maximum Brake Energy Speed
VMC	Visual Meteorological Condition
VMO	Maximum Operating Speed
VNAV	Vertical Navigation
VOR	VHF Omnidirectional Range
VR	Rotation Speed
VREF	Reference Speed
V/S	Vertical Speed
VSA	Visual Separation on Approach
VSD	Vertical Situation Display
VTK	Vertical Track

W	
WAP	Wireless Access Point
WGS-84	World Geodetic Survey 1984
WIPS	Wing Ice Protection System
WPT	Waypoint
WT	Weight
WX or WXR	Weather Radar

X	
X	(generic reference to a variable instance)
XFR	Transfer
XPDR	Transponder
XTK	Cross Track
X/WIND	Crosswind

Z	
ZFW	Zero Fuel Weight

Revision Record

Revision Number	Revised by	Remark
14	BKKPC	Incorporated
15	BKKPC	

Revision Highlights

General

The Company issues MEL revisions to provide new or revised procedures and information.

Revisions include a Filing Instruction, Revision Status, Revision Highlights, and a List of Effective Sections. Use the information on the Filing Instruction and List of Effective Sections to verify the manual content.

oOo indicates the end of sections.

Revision Highlights

Revision marks indicate changes to contents. These marks are removed in the digital format of the subsequent revision. Revision marks include:

- Shading (gray for PDF, yellow for HTML) on texts or illustrations indicates changes to or addition of the content for the current revision.
- "DELETION" mark appears when a text or illustration from previous revision has been deleted.
- Asterisk (*) symbol appearing adjacent to airplane registration numbers indicates changes to airplane effectivity of that content.

Revision highlights provide brief reasons for changes to individual contents. Technical changes are always provided with revision highlights. There are cases where non-technical changes are not accompanied by revision highlights. These include but not limited to:

- Minor grammatical corrections
- Changes to publishing system database configuration; revision marks may appear on contents that appear unchanged.

Page	Comment
	Revised Document Revision. *(Important)*
PRE-19	Changed wording "Revision Date" to "Revised by". *(Important)*
Section 0-5	Revised Distribution Channel. *(Important)*
Section 1-38	Deleted MEL item. *(Important)*
Section 1-45	Updated to show the correct MEL item number. *(Important)*
Section 2-2	Revised General Notes *(Important)*
Section 2-2	Added Description and Use of MEL and revised Responsibility Department Name. *(Important)*
Section 2-6	Revised Placards, EICAS and Fuel Burn Penalty Negligibility Criteria Description. *(Important)*
ATA 21-27	Added the missing word "exhaust" to match DDG item name and updated equipment name for consistency. *(Important)*
ATA 21-46	Delete a note due to N/A condition. *(Important)*
ATA 21-49	Updated repair interval to align with PL-130. *(Important)*
ATA 21-79	Made correction to part number. *(Important)*
ATA 21-84	Added (O) notes to address temperatures control problem in OFCR. *(Important)*
ATA 21-85	Added (O) notes to address temperatures control problem in OFCR. *(Important)*
ATA 21-86	Revised error from "exhaust" to "vent" and updated note to say "may be displayed" instead of "will be displayed" and updated step to turn valve is fully open. *(Important)*

(continued)

Page	Comment
ATA 21-104	Added missing reference. *(Important)*
ATA 21-105	Provided additional info regarding RAF status affecting PACK operations on the ground. *(Important)*
ATA 21-106	Added Operation Note procedure *(Important)*
ATA 21-108	Delete a note due to N/A condition. *(Important)*
ATA 21-109	Delete a note due to N/A condition. *(Important)*
ATA 21-128	Updated referenced item to remove the sub-item numbers. *(Important)*
ATA 21-131	Removed reference "For PCU operative on inoperative pack" from procedure since it is not relevant. *(Important)*
ATA 21-150	Added guidance to address PACK ALTITUDE LIMIT caution message. *(Important)*
ATA 21-152	Added guidance to address PACK ALTITUDE LIMIT caution message. *(Important)*
ATA 21-153	Added "cabin air compressor" to proviso for further clarify. *(Important)*
ATA 21-154	Correct OAT temperature. *(Important)*
ATA 21-156	Added "cabin air compressor" to proviso for further clarify. *(Important)*
ATA 21-159	Deleted an erroneous reference to dispatch with MEL item 21-51-09-01. *(Important)*
ATA 21-161	Deleted an erroneous reference to dispatch with MEL item 21-51-09-01. *(Important)*
ATA 21-170	Added missing note and added expected EICAS status message. *(Important)*
ATA 21-177	Corrected the EICAS reference. *(Important)*
ATA 21-179	Correct circuit breaker name to align with CBIC screen. *(Important)*
ATA 21-191	Previous note was removed from step E. *(Important)*
ATA 21-192	Deleted NOTE. *(Important)*
ATA 21-205	Delete a note due to N/A condition and Corrected effected aircraft(s). *(Important)*
ATA 23-25	Added new sub-item to align with PL-120, R4. *(Important)*
ATA 23-27	Updated repair interval to align with PL-120. *(Important)*
ATA 23-50	Added option A for deactivating microphone switch only. *(Important)*
ATA 23-50	Provided specific description of the switch i.e. "microphone switch" instead of "affected switch". *(Important)*
ATA 23-51	Added new option B for deactivating the entire switch panel. *(Important)*
ATA 24-10	Added (O) procedures to address temperature-related issue associated with main engine start. *(Important)*
ATA 24-13	Created new dispatch option (-02A) for connected VFSG. *(Important)*
ATA 24-15	Created new dispatch option (-02B) for connected VFSG. *(Important)*
ATA 24-29	Added the missing door 3L/3R to (M) note. *(Important)*
ATA 25-5	Delete MEL item 25-00-01 due to TG change NEF item list to GMM. *(Important)*

(continued)

Page	Comment
ATA 25-26	Revised "installed" no. from "310" to "298". *(Important)*
ATA 25-47	Re-numbered to "Note 1" and added Note 2 to align with PL-104. *(Important)*
ATA 25-68	New dispatch item created in MEL Revision No. 15. *(Important)*
ATA 25-69	New dispatch item created in MEL Revision No. 15. *(Important)*
ATA 25-75	Revised to align with PL-132. *(Important)*
ATA 25-75	Updated item name to align with PL-132. *(Important)*
ATA 25-78	Revised provisos to align with PL-132. and added note to align with PL-132 *(Important)*
ATA 25-79	Re-number MEL item. *(Important)*
ATA 25-80	Updated provisos to align with PL-132. *(Important)*
ATA 25-80	Re-number MEL item. *(Important)*
ATA 25-81	Updated provisos to align with PL-132. and added new note to align with PL-132. *(Important)*
ATA 25-81	Sub-item re-named and Changed No. of Installed and Required. *(Important)*
ATA 25-82	Added new sub-item 25-64-03-03B. *(Important)*
ATA 26-5	Fixed erroneous MEL item number in note 2. and added guidance that hydraulic reservoir auto-bleed valve system status message will also be annunciated. *(Important)*
ATA 26-7	Added guidance that hydraulic reservoir auto-bleed valve system status message will also be annunciated. *(Important)*
ATA 26-26	Restructured provisos to add restrictions for flaps 20 takeoff. *(Important)*
ATA 26-26	Added guidance to prohibit flaps 20 takeoff. *(Important)*
ATA 26-45	Removed "(M)" indicator to align with PL-132. *(Important)*
ATA 26-45	Converted (M) procedures into (M) notes and used the word "Ensure" instead of "Confirm" *(Important)*
ATA 26-45	Updated provisos to align with PL-132 and added note to align with PL-132. *(Important)*
ATA 26-46	Removed "(M)" indicator to align with PL-132. *(Important)*
ATA 26-46	Updated provisos to align with PL-132 and added note to align with PL-132. *(Important)*
ATA 26-46	Converted (M) procedures into (M) notes and used the word "Ensure" instead of "Confirm" *(Important)*
ATA 27-10	Updated note for clarity. *(Important)*
ATA 27-23	Re-structured provisos to add appropriate weight limits observed. *(Important)*
ATA 27-33	Added new operations note. *(Important)*
ATA 27-40	Updated note to remove reference to "cruise" phase and used "either incrementing the current the airplane" instead of "either using an airplane. *(Important)*
ATA 27-41	Updated note to remove reference to "cruise" phase and refer fuel burn penalties to -01A sub-item. *(Important)*
ATA 27-43	Added performance for 787-8 and 787-9 airplane and note added to defined enroute climb weight penalties. *(Important)*
ATA 27-44	Updated note to remove reference to "cruise" phase and refer fuel burn penalties to -01A sub-item. *(Important)*

(continued)

Page	Comment
ATA 27-57	Added further clarification on the effects to flight controls when spoiler is deactivated, Added (O) procedure and Re-number note. *(Important)*
ATA 27-58	Added (O) Note. *(Important)*
ATA 28-17	Modified Maintenance procedure and added note. *(Important)*
ATA 28-18	Added (O) note to have the affected fuel pump switch selected to off. *(Important)*
ATA 28-22	Added "both" to clarify that both inoperative pumps need to be deactivated. *(Important)*
ATA 28-24	Added "both" to clarify that both inoperative pumps needed to be deactivated. *(Important)*
ATA 28-39	Added (M) note with guidance for manual fueling operation only. *(Important)*
ATA 28-47	Added note to have airplane dispatched with fuel jettison since it is required by proviso to be deactivated. *(Important)*
ATA 28-53	Corrected error in value. Should be 2177 kg. *(Important)*
ATA 29-25	Updated note to add dispatch tool reference. *(Important)*
ATA 30-10	This note is now designated as note 1 due to the addition of the note to reference the service bulletin and added an inspection criteria to visually check for possible thermal damage to the engine inlet cavity due to valve deactivated in the mid position. *(Important)*
ATA 30-22	Added guidance to check the IPD for part number compatibility. *(Important)*
ATA 30-23	Added guidance to check the IPD for part number compatibility. *(Important)*
ATA 30-24	Added guidance to check the IPD for part number compatibility. *(Important)*
ATA 30-25	Updated dispatch note for accuracy. *(Important)*
ATA 30-26	Updated (M) step 1 for better accuracy and alignment with AMM instruction. *(Important)*
ATA 31-44	Add alternate proviso. *(Important)*
ATA 31-48	Added (O) note to provide additional guidance for SURF symbol display. *(Important)*
ATA 32-34	Added a missing step to open circuit break prior to gaining access to the nose landing gear. *(Important)*
ATA 32-36	Added note to advise that EICAS message is displayed when CBs are pulled in this step to align with AMM. *(Important)*
ATA 32-37	Moved previous step 3 and placed in current step 2 (content not changed) to reflect a more accurate procedure. *(Important)*
ATA 32-46	Added new proviso to restrict flaps 20 takeoff. *(Important)*
ATA 32-46	Added guidance to restrict flaps 20 takeoff and re-numbered steps only. No content changed. *(Important)*
ATA 32-49	Added new proviso to restrict flaps 20 takeoff. *(Important)*
ATA 32-51	Added new guidance to restrict flaps 20 takeoff. *(Important)*
ATA 32-56	Restructured provisos to add restrictions for flaps 20 takeoff. *(Important)*
ATA 32-56	Added guidance to restrict flaps 20 takeoff and re-numbered step only. No content changed. *(Important)*
ATA 34-13	Re-sequenced the procedure to be more accurate and Re-sequenced the procedure to be more accurate and added new guidance for IRS switch to be ON. *(Important)*
ATA 34-13	Re-sequenced the procedure to be more accurate and added new guidance for IRS switch to be ON. *(Important)*
ATA 34-15	Re-sequenced the procedure to be more accurate. *(Important)*

(continued)

Page	Comment
ATA 34-25	Added (O) note for SGL SOURCE APPROACH display. *(Important)*
ATA 34-28	Add (O) step 4. to 6. *(Important)*
ATA 35-12	Revised item title to align with PL-132. *(Important)*
ATA 35-12	Added note to align with PL-132. *(Important)*
ATA 35-12	Added (M) instruction for better clarification and Modified Maintenance procedure. *(Important)*
ATA 35-12	Updated proviso to align with PL-132. *(Important)*
ATA 35-13	Updated item name to align with PL-132. *(Important)*
ATA 35-13	Updated proviso to align with PL-132 and Updated to align with PL-132 and Replaced "PBE units" with "PBE" to align with PL-132. *(Important)*
ATA 35-14	Updated item name to align with PL-132. *(Important)*
ATA 35-14	Updated proviso to align with PL-132 and Updated to align with PL-132 and Replaced "PBE units" with "PBE" to align with PL-132. *(Important)*
ATA 44-7	Added option for 787-8 airplane inoperative speakers not adjacent , added maintenance indicator and updated proviso to ensure inoperative speakers are not adjacent to each other. *(Important)*
ATA 44-8	Added option for 787-9 airplane inoperative speakers not adjacent, added maintenance indicator and updated proviso to ensure inoperative speakers are not adjacent to each other. *(Important)*
ATA 44-9	New dispatch option added when inoperative speakers are adjacent for 787-8 airplane. *(Important)*
ATA 44-10	New dispatch option added when inoperative speakers are adjacent for 787-9 airplane. *(Important)*
ATA 44-16	Re-structured provisos to align with PL-9. *(Important)*
ATA 46-2	Updated items to align with PL-121 R1. *(Important)*
ATA 46-2	Add (O) procedure. *(Important)*
ATA 46-3	Updated items to align with PL-121 R1 and move MEL item 46-11-01-01C to MEL item 46-11-01-01B. *(Important)*
ATA 46-4	Added missing dispatch reference to 46-11-01. *(Important)*
ATA 49-2	Revised note to provide further clarification and re-structured note to add numbering system and added further guidance on ground power engine start. *(Important)*
ATA 49-2	Added further guidance on ground power engine start. *(Important)*
ATA 50-2	Updated terminology from "sidewall/frame/skin panels" to "fire barrier" for more accuracy. *(Important)*
ATA 50-2	Updated note for further clarification. *(Important)*
ATA 50-4	Updated item name to align with PL-100 R3. *(Important)*
ATA 50-4	Updated provisos to align with PL-100 R3. *(Important)*
ATA 50-5	Updated dispatch interval to align with PL-100 R3. *(Important)*
ATA 50-5	Updated provisos to align with PL-100 R3. *(Important)*
ATA 50-6	Added new sub-item to align with PL-100 R3. *(Important)*
ATA 52-4	Revised proviso to clarify Inoperative door, Blocked Row, No. of Blocked Seats and Remaining Seat Capacity. *(Important)*
ATA 73-5	Added (M) instruction for better clarification. *(Important)*

(continued)

Page	Comment
ATA 73-6	Added note instruction for better clarification. *(Important)*
ATA 75-2	Item re-named to create sub-items. *(Important)*
ATA 75-3	Item re-named to create sub-items. *(Important)*
ATA 75-5	Added step as a stand-alone step instead of belonging under -10 (previously). *(Important)*
ATA 32-18	Revised to align with AFM CDL Rev. No. 17. *(Important)*
ATA 32-20	Revised to align with AFM CDL Rev. No. 17. *(Important)*
ATA 52-6	Removed the AMM reference as it is not correct. *(Important)*
Section 4-2	Corrected item number to 27-02-02 and added the missing RNP 2/RNP 4 to table. *(Important)*
Section 4-3	Only one system is required instead of two. *(Important)*

List of Effective Pages

Chapter	Page	Revision	Date	Chapter	Page	Revision	Date
		15	29-Apr-24	PRE	**35**	15	29-Apr-24
TOC	**1**	14	01-Oct-21	PRE	**36**	15	29-Apr-24
TOC	**2**	14	01-Oct-21	PRE	**37**	15	29-Apr-24
TOC	**3**	14	01-Oct-21	PRE	**38**	15	29-Apr-24
PRE	**1**	14	01-Oct-21	PRE	**39**	15	29-Apr-24
PRE	**2**	14	01-Oct-21	PRE	**40**	15	29-Apr-24
PRE	**3**	14	01-Oct-21	PRE	**41**	15	29-Apr-24
PRE	**4**	14	01-Oct-21	PRE	**42**	15	29-Apr-24
PRE	**5**	14	01-Oct-21	PRE	**43**	15	29-Apr-24
PRE	**6**	14	01-Oct-21	PRE	**44**	15	29-Apr-24
PRE	**7**	14	01-Oct-21	Section 0	**1**	14	01-Oct-21
PRE	**8**	14	01-Oct-21	Section 0	**2**	14	01-Oct-21
PRE	**9**	14	01-Oct-21	Section 0	**3**	14	01-Oct-21
PRE	**10**	14	01-Oct-21	Section 0	**4**	14	01-Oct-21
PRE	**11**	14	01-Oct-21	Section 0	**5**	15	29-Apr-24
PRE	**12**	14	01-Oct-21	Section 0	**6**	14	01-Oct-21
PRE	**13**	14	01-Oct-21	Section 0	**7**	14	01-Oct-21
PRE	**14**	14	01-Oct-21	Section 0	**8**	15	29-Apr-24
PRE	**15**	14	01-Oct-21	Section 1	**1**	14	01-Oct-21
PRE	**16**	14	01-Oct-21	Section 1	**2**	15	29-Apr-24
PRE	**17**	14	01-Oct-21	Section 1	**3**	14	01-Oct-21
PRE	**18**	14	01-Oct-21	Section 1	**4**	14	01-Oct-21
PRE	**19**	15	29-Apr-24	Section 1	**5**	14	01-Oct-21
PRE	**20**	15	29-Apr-24	Section 1	**6**	14	01-Oct-21
PRE	**21**	15	29-Apr-24	Section 1	**7**	14	01-Oct-21
PRE	**22**	15	29-Apr-24	Section 1	**8**	14	01-Oct-21
PRE	**23**	15	29-Apr-24	Section 1	**9**	14	01-Oct-21
PRE	**24**	15	29-Apr-24	Section 1	**10**	14	01-Oct-21
PRE	**25**	15	29-Apr-24	Section 1	**11**	14	01-Oct-21
PRE	**26**	15	29-Apr-24	Section 1	**12**	14	01-Oct-21
PRE	**27**	15	29-Apr-24	Section 1	**13**	14	01-Oct-21
PRE	**28**	15	29-Apr-24	Section 1	**14**	14	01-Oct-21
PRE	**29**	15	29-Apr-24	Section 1	**15**	14	01-Oct-21
PRE	**30**	15	29-Apr-24	Section 1	**16**	14	01-Oct-21
PRE	**31**	15	29-Apr-24	Section 1	**17**	14	01-Oct-21
PRE	**32**	15	29-Apr-24	Section 1	**18**	14	01-Oct-21
PRE	**33**	15	29-Apr-24	Section 1	**19**	14	01-Oct-21
PRE	**34**	15	29-Apr-24	Section 1	**20**	14	01-Oct-21

(continued)

Chapter	Page	Revision	Date
Section 1	21	14	01-Oct-21
Section 1	22	14	01-Oct-21
Section 1	23	14	01-Oct-21
Section 1	24	14	01-Oct-21
Section 1	25	14	01-Oct-21
Section 1	26	14	01-Oct-21
Section 1	27	14	01-Oct-21
Section 1	28	14	01-Oct-21
Section 1	29	14	01-Oct-21
Section 1	30	14	01-Oct-21
Section 1	31	14	01-Oct-21
Section 1	32	14	01-Oct-21
Section 1	33	14	01-Oct-21
Section 1	34	14	01-Oct-21
Section 1	35	14	01-Oct-21
Section 1	36	14	01-Oct-21
Section 1	37	14	01-Oct-21
Section 1	38	14	01-Oct-21
Section 1	39	14	01-Oct-21
Section 1	40	14	01-Oct-21
Section 1	41	14	01-Oct-21
Section 1	42	14	01-Oct-21
Section 1	43	14	01-Oct-21
Section 1	44	14	01-Oct-21
Section 1	45	15	29-Apr-24
Section 1	46	15	29-Apr-24
Section 1	47	15	29-Apr-24
Section 1	48	14	01-Oct-21
Section 1	49	15	29-Apr-24
Section 1	50	14	01-Oct-21
Section 1	51	14	01-Oct-21
Section 1	52	14	01-Oct-21
Section 1	53	14	01-Oct-21
Section 1	54	15	29-Apr-24
Section 1	55	14	01-Oct-21
Section 1	56	14	01-Oct-21
Section 1	57	14	01-Oct-21
Section 1	58	14	01-Oct-21
Section 1	59	14	01-Oct-21
Section 1	60	14	01-Oct-21
Section 1	61	14	01-Oct-21
Section 1	62	14	01-Oct-21
Section 1	63	14	01-Oct-21
Section 1	64	15	29-Apr-24
Section 1	65	15	29-Apr-24
Section 1	66	14	01-Oct-21
Section 2	1	14	01-Oct-21
Section 2	2	15	29-Apr-24
Section 2	3	14	01-Oct-21
Section 2	4	14	01-Oct-21
Section 2	5	14	01-Oct-21
Section 2	6	15	29-Apr-24
ATA 21	1	14	01-Oct-21
ATA 21	2	14	01-Oct-21
ATA 21	3	14	01-Oct-21
ATA 21	4	14	01-Oct-21
ATA 21	5	14	01-Oct-21
ATA 21	6	14	01-Oct-21
ATA 21	7	14	01-Oct-21
ATA 21	8	14	01-Oct-21
ATA 21	9	14	01-Oct-21
ATA 21	10	14	01-Oct-21
ATA 21	11	14	01-Oct-21
ATA 21	12	14	01-Oct-21
ATA 21	13	14	01-Oct-21
ATA 21	14	14	01-Oct-21
ATA 21	15	14	01-Oct-21
ATA 21	16	14	01-Oct-21
ATA 21	17	14	01-Oct-21
ATA 21	18	14	01-Oct-21
ATA 21	19	14	01-Oct-21
ATA 21	20	14	01-Oct-21
ATA 21	21	14	01-Oct-21
ATA 21	22	14	01-Oct-21
ATA 21	23	14	01-Oct-21
ATA 21	24	14	01-Oct-21

(continued)

Chapter	Page	Revision	Date	Chapter	Page	Revision	Date
ATA 21	25	14	01-Oct-21	ATA 21	63	14	01-Oct-21
ATA 21	26	14	01-Oct-21	ATA 21	64	14	01-Oct-21
ATA 21	27	15	29-Apr-24	ATA 21	65	14	01-Oct-21
ATA 21	28	14	01-Oct-21	ATA 21	66	14	01-Oct-21
ATA 21	29	14	01-Oct-21	ATA 21	67	14	01-Oct-21
ATA 21	30	14	01-Oct-21	ATA 21	68	14	01-Oct-21
ATA 21	31	14	01-Oct-21	ATA 21	69	14	01-Oct-21
ATA 21	32	14	01-Oct-21	ATA 21	70	14	01-Oct-21
ATA 21	33	14	01-Oct-21	ATA 21	71	14	01-Oct-21
ATA 21	34	14	01-Oct-21	ATA 21	72	14	01-Oct-21
ATA 21	35	14	01-Oct-21	ATA 21	73	14	01-Oct-21
ATA 21	36	14	01-Oct-21	ATA 21	74	14	01-Oct-21
ATA 21	37	14	01-Oct-21	ATA 21	75	14	01-Oct-21
ATA 21	38	14	01-Oct-21	ATA 21	76	14	01-Oct-21
ATA 21	39	14	01-Oct-21	ATA 21	77	14	01-Oct-21
ATA 21	40	14	01-Oct-21	ATA 21	78	14	01-Oct-21
ATA 21	41	14	01-Oct-21	ATA 21	79	15	29-Apr-24
ATA 21	42	14	01-Oct-21	ATA 21	80	14	01-Oct-21
ATA 21	43	14	01-Oct-21	ATA 21	81	14	01-Oct-21
ATA 21	44	14	01-Oct-21	ATA 21	82	14	01-Oct-21
ATA 21	45	14	01-Oct-21	ATA 21	83	14	01-Oct-21
ATA 21	46	15	29-Apr-24	ATA 21	84	15	29-Apr-24
ATA 21	47	14	01-Oct-21	ATA 21	85	15	29-Apr-24
ATA 21	48	14	01-Oct-21	ATA 21	86	15	29-Apr-24
ATA 21	49	15	29-Apr-24	ATA 21	87	14	01-Oct-21
ATA 21	50	14	01-Oct-21	ATA 21	88	14	01-Oct-21
ATA 21	51	14	01-Oct-21	ATA 21	89	14	01-Oct-21
ATA 21	52	14	01-Oct-21	ATA 21	90	14	01-Oct-21
ATA 21	53	14	01-Oct-21	ATA 21	91	14	01-Oct-21
ATA 21	54	14	01-Oct-21	ATA 21	92	14	01-Oct-21
ATA 21	55	14	01-Oct-21	ATA 21	93	14	01-Oct-21
ATA 21	56	14	01-Oct-21	ATA 21	94	14	01-Oct-21
ATA 21	57	14	01-Oct-21	ATA 21	95	14	01-Oct-21
ATA 21	58	14	01-Oct-21	ATA 21	96	14	01-Oct-21
ATA 21	59	14	01-Oct-21	ATA 21	97	14	01-Oct-21
ATA 21	60	14	01-Oct-21	ATA 21	98	14	01-Oct-21
ATA 21	61	14	01-Oct-21	ATA 21	99	14	01-Oct-21
ATA 21	62	14	01-Oct-21	ATA 21	100	14	01-Oct-21

(continued)

Chapter	Page	Revision	Date	Chapter	Page	Revision	Date
ATA 21	**101**	14	01-Oct-21	ATA 21	**139**	14	01-Oct-21
ATA 21	**102**	14	01-Oct-21	ATA 21	**140**	14	01-Oct-21
ATA 21	**103**	14	01-Oct-21	ATA 21	**141**	14	01-Oct-21
ATA 21	**104**	15	29-Apr-24	ATA 21	**142**	14	01-Oct-21
ATA 21	**105**	15	29-Apr-24	ATA 21	**143**	14	01-Oct-21
ATA 21	**106**	14	01-Oct-21	ATA 21	**144**	14	01-Oct-21
ATA 21	**107**	14	01-Oct-21	ATA 21	**145**	14	01-Oct-21
ATA 21	**108**	15	29-Apr-24	ATA 21	**146**	14	01-Oct-21
ATA 21	**109**	14	01-Oct-21	ATA 21	**147**	14	01-Oct-21
ATA 21	**110**	14	01-Oct-21	ATA 21	**148**	14	01-Oct-21
ATA 21	**111**	14	01-Oct-21	ATA 21	**149**	14	01-Oct-21
ATA 21	**112**	14	01-Oct-21	ATA 21	**150**	15	29-Apr-24
ATA 21	**113**	14	01-Oct-21	ATA 21	**151**	14	01-Oct-21
ATA 21	**114**	14	01-Oct-21	ATA 21	**152**	15	29-Apr-24
ATA 21	**115**	14	01-Oct-21	ATA 21	**153**	15	29-Apr-24
ATA 21	**116**	14	01-Oct-21	ATA 21	**154**	15	29-Apr-24
ATA 21	**117**	14	01-Oct-21	ATA 21	**155**	14	01-Oct-21
ATA 21	**118**	14	01-Oct-21	ATA 21	**156**	15	29-Apr-24
ATA 21	**119**	14	01-Oct-21	ATA 21	**157**	15	29-Apr-24
ATA 21	**120**	14	01-Oct-21	ATA 21	**158**	14	01-Oct-21
ATA 21	**121**	14	01-Oct-21	ATA 21	**159**	15	29-Apr-24
ATA 21	**122**	14	01-Oct-21	ATA 21	**160**	14	01-Oct-21
ATA 21	**123**	14	01-Oct-21	ATA 21	**161**	15	29-Apr-24
ATA 21	**124**	14	01-Oct-21	ATA 21	**162**	14	01-Oct-21
ATA 21	**125**	14	01-Oct-21	ATA 21	**163**	14	01-Oct-21
ATA 21	**126**	14	01-Oct-21	ATA 21	**164**	14	01-Oct-21
ATA 21	**127**	15	29-Apr-24	ATA 21	**165**	14	01-Oct-21
ATA 21	**128**	15	29-Apr-24	ATA 21	**166**	14	01-Oct-21
ATA 21	**129**	14	01-Oct-21	ATA 21	**167**	14	01-Oct-21
ATA 21	**130**	14	01-Oct-21	ATA 21	**168**	14	01-Oct-21
ATA 21	**131**	15	29-Apr-24	ATA 21	**169**	14	01-Oct-21
ATA 21	**132**	14	01-Oct-21	ATA 21	**170**	15	29-Apr-24
ATA 21	**133**	14	01-Oct-21	ATA 21	**171**	14	01-Oct-21
ATA 21	**134**	14	01-Oct-21	ATA 21	**172**	14	01-Oct-21
ATA 21	**135**	14	01-Oct-21	ATA 21	**173**	14	01-Oct-21
ATA 21	**136**	14	01-Oct-21	ATA 21	**174**	14	01-Oct-21
ATA 21	**137**	14	01-Oct-21	ATA 21	**175**	14	01-Oct-21
ATA 21	**138**	14	01-Oct-21	ATA 21	**176**	14	01-Oct-21

(continued)

Chapter	Page	Revision	Date
ATA 21	**177**	15	29-Apr-24
ATA 21	**178**	14	01-Oct-21
ATA 21	**179**	15	29-Apr-24
ATA 21	**180**	14	01-Oct-21
ATA 21	**181**	14	01-Oct-21
ATA 21	**182**	14	01-Oct-21
ATA 21	**183**	14	01-Oct-21
ATA 21	**184**	14	01-Oct-21
ATA 21	**185**	14	01-Oct-21
ATA 21	**186**	14	01-Oct-21
ATA 21	**187**	14	01-Oct-21
ATA 21	**188**	14	01-Oct-21
ATA 21	**189**	14	01-Oct-21
ATA 21	**190**	14	01-Oct-21
ATA 21	**191**	15	29-Apr-24
ATA 21	**192**	15	29-Apr-24
ATA 21	**193**	14	01-Oct-21
ATA 21	**194**	14	01-Oct-21
ATA 21	**195**	14	01-Oct-21
ATA 21	**196**	14	01-Oct-21
ATA 21	**197**	14	01-Oct-21
ATA 21	**198**	14	01-Oct-21
ATA 21	**199**	14	01-Oct-21
ATA 21	**200**	14	01-Oct-21
ATA 21	**201**	14	01-Oct-21
ATA 21	**202**	14	01-Oct-21
ATA 21	**203**	14	01-Oct-21
ATA 21	**204**	14	01-Oct-21
ATA 21	**205**	15	29-Apr-24
ATA 21	**206**	14	01-Oct-21
ATA 21	**207**	14	01-Oct-21
ATA 21	**208**	14	01-Oct-21
ATA 21	**209**	14	01-Oct-21
ATA 21	**210**	14	01-Oct-21
ATA 22	**1**	14	01-Oct-21
ATA 22	**2**	14	01-Oct-21
ATA 22	**3**	14	01-Oct-21
ATA 22	**4**	14	01-Oct-21
ATA 22	**5**	14	01-Oct-21
ATA 22	**6**	14	01-Oct-21
ATA 22	**7**	14	01-Oct-21
ATA 22	**8**	14	01-Oct-21
ATA 22	**9**	14	01-Oct-21
ATA 22	**10**	14	01-Oct-21
ATA 22	**11**	14	01-Oct-21
ATA 22	**12**	14	01-Oct-21
ATA 22	**13**	14	01-Oct-21
ATA 22	**14**	14	01-Oct-21
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ATA 22	**40**	14	01-Oct-21
ATA 22	**41**	14	01-Oct-21
ATA 22	**42**	14	01-Oct-21

(continued)

CIVIL AVIATION AUTHORITY OF THAILAND

Chapter	Page	Revision	Date
ATA 22	**43**	14	01-Oct-21
ATA 22	**44**	14	01-Oct-21
ATA 22	**45**	14	01-Oct-21
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ATA 24	**12**	14	01-Oct-21
ATA 24	**13**	15	29-Apr-24
ATA 24	**14**	15	29-Apr-24

(continued)

Chapter	Page	Revision	Date
ATA 24	**15**	15	29-Apr-24
ATA 24	**16**	15	29-Apr-24
ATA 24	**17**	14	01-Oct-21
ATA 24	**18**	14	01-Oct-21
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ATA 25	**37**	14	01-Oct-21
ATA 25	**38**	14	01-Oct-21
ATA 25	**39**	14	01-Oct-21

(continued)

THE CIVIL AVIATION AUTHORITY OF THAILAND

Chapter	Page	Revision	Date	Chapter	Page	Revision	Date
ATA 25	**40**	14	01-Oct-21	ATA 25	**78**	15	29-Apr-24
ATA 25	**41**	14	01-Oct-21	ATA 25	**79**	15	29-Apr-24
ATA 25	**42**	14	01-Oct-21	ATA 25	**80**	14	01-Oct-21
ATA 25	**43**	14	01-Oct-21	ATA 25	**81**	15	29-Apr-24
ATA 25	**44**	14	01-Oct-21	ATA 25	**82**	15	29-Apr-24
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ATA 25	**61**	14	01-Oct-21	ATA 26	**15**	14	01-Oct-21
ATA 25	**62**	14	01-Oct-21	ATA 26	**16**	14	01-Oct-21
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ATA 25	**77**	14	01-Oct-21	ATA 26	**31**	14	01-Oct-21

(continued)

Chapter	Page	Revision	Date
ATA 26	32	14	01-Oct-21
ATA 26	33	14	01-Oct-21
ATA 26	34	14	01-Oct-21
ATA 26	35	14	01-Oct-21
ATA 26	36	14	01-Oct-21
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ATA 27	58	14	01-Oct-21
ATA 27	59	14	01-Oct-21
ATA 27	60	14	01-Oct-21
ATA 27	61	14	01-Oct-21

(continued)

Chapter	Page	Revision	Date	Chapter	Page	Revision	Date
ATA 27	**62**	14	01-Oct-21	ATA 28	**36**	14	01-Oct-21
ATA 27	**63**	14	01-Oct-21	ATA 28	**37**	14	01-Oct-21
ATA 27	**64**	14	01-Oct-21	ATA 28	**38**	14	01-Oct-21
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ATA 28	**6**	14	01-Oct-21	ATA 28	**44**	14	01-Oct-21
ATA 28	**7**	14	01-Oct-21	ATA 28	**45**	15	29-Apr-24
ATA 28	**8**	14	01-Oct-21	ATA 28	**46**	14	01-Oct-21
ATA 28	**9**	14	01-Oct-21	ATA 28	**47**	15	29-Apr-24
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ATA 28	**34**	14	01-Oct-21	ATA 29	**13**	14	01-Oct-21
ATA 28	**35**	14	01-Oct-21	ATA 29	**14**	14	01-Oct-21

(continued)

CIVIL AVIATION AUTHORITY OF THAILAND

Chapter	Page	Revision	Date
ATA 29	**15**	14	01-Oct-21
ATA 29	**16**	14	01-Oct-21
ATA 29	**17**	14	01-Oct-21
ATA 29	**18**	14	01-Oct-21
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ATA 31	**7**	14	01-Oct-21
ATA 31	**8**	14	01-Oct-21
ATA 31	**9**	14	01-Oct-21

(continued)

Chapter	Page	Revision	Date	Chapter	Page	Revision	Date
ATA 31	**10**	14	01-Oct-21	ATA 31	**48**	15	29-Apr-24
ATA 31	**11**	14	01-Oct-21	ATA 31	**49**	14	01-Oct-21
ATA 31	**12**	14	01-Oct-21	ATA 31	**50**	14	01-Oct-21
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ATA 31	**15**	14	01-Oct-21	ATA 31	**53**	14	01-Oct-21
ATA 31	**16**	14	01-Oct-21	ATA 31	**54**	14	01-Oct-21
ATA 31	**17**	14	01-Oct-21	ATA 31	**55**	14	01-Oct-21
ATA 31	**18**	14	01-Oct-21	ATA 31	**56**	14	01-Oct-21
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ATA 31	**22**	14	01-Oct-21	ATA 32	**3**	14	01-Oct-21
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ATA 31	**24**	14	01-Oct-21	ATA 32	**5**	14	01-Oct-21
ATA 31	**25**	14	01-Oct-21	ATA 32	**6**	14	01-Oct-21
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ATA 31	**27**	14	01-Oct-21	ATA 32	**8**	14	01-Oct-21
ATA 31	**28**	14	01-Oct-21	ATA 32	**9**	14	01-Oct-21
ATA 31	**29**	14	01-Oct-21	ATA 32	**10**	14	01-Oct-21
ATA 31	**30**	14	01-Oct-21	ATA 32	**11**	14	01-Oct-21
ATA 31	**31**	14	01-Oct-21	ATA 32	**12**	14	01-Oct-21
ATA 31	**32**	14	01-Oct-21	ATA 32	**13**	14	01-Oct-21
ATA 31	**33**	14	01-Oct-21	ATA 32	**14**	14	01-Oct-21
ATA 31	**34**	14	01-Oct-21	ATA 32	**15**	14	01-Oct-21
ATA 31	**35**	14	01-Oct-21	ATA 32	**16**	14	01-Oct-21
ATA 31	**36**	14	01-Oct-21	ATA 32	**17**	14	01-Oct-21
ATA 31	**37**	14	01-Oct-21	ATA 32	**18**	14	01-Oct-21
ATA 31	**38**	14	01-Oct-21	ATA 32	**19**	14	01-Oct-21
ATA 31	**39**	14	01-Oct-21	ATA 32	**20**	14	01-Oct-21
ATA 31	**40**	14	01-Oct-21	ATA 32	**21**	14	01-Oct-21
ATA 31	**41**	14	01-Oct-21	ATA 32	**22**	14	01-Oct-21
ATA 31	**42**	14	01-Oct-21	ATA 32	**23**	14	01-Oct-21
ATA 31	**43**	14	01-Oct-21	ATA 32	**24**	14	01-Oct-21
ATA 31	**44**	15	29-Apr-24	ATA 32	**25**	14	01-Oct-21
ATA 31	**45**	14	01-Oct-21	ATA 32	**26**	14	01-Oct-21
ATA 31	**46**	14	01-Oct-21	ATA 32	**27**	14	01-Oct-21
ATA 31	**47**	14	01-Oct-21	ATA 32	**28**	14	01-Oct-21

(continued)

Chapter	Page	Revision	Date
ATA 32	**29**	14	01-Oct-21
ATA 32	**30**	14	01-Oct-21
ATA 32	**31**	14	01-Oct-21
ATA 32	**32**	14	01-Oct-21
ATA 32	**33**	14	01-Oct-21
ATA 32	**34**	15	29-Apr-24
ATA 32	**35**	15	29-Apr-24
ATA 32	**36**	15	29-Apr-24
ATA 32	**37**	15	29-Apr-24
ATA 32	**38**	14	01-Oct-21
ATA 32	**39**	14	01-Oct-21
ATA 32	**40**	14	01-Oct-21
ATA 32	**41**	14	01-Oct-21
ATA 32	**42**	14	01-Oct-21
ATA 32	**43**	14	01-Oct-21
ATA 32	**44**	14	01-Oct-21
ATA 32	**45**	14	01-Oct-21
ATA 32	**46**	15	29-Apr-24
ATA 32	**47**	14	01-Oct-21
ATA 32	**48**	14	01-Oct-21
ATA 32	**49**	15	29-Apr-24
ATA 32	**50**	14	01-Oct-21
ATA 32	**51**	15	29-Apr-24
ATA 32	**52**	14	01-Oct-21
ATA 32	**53**	14	01-Oct-21
ATA 32	**54**	14	01-Oct-21
ATA 32	**55**	14	01-Oct-21
ATA 32	**56**	15	29-Apr-24
ATA 32	**57**	14	01-Oct-21
ATA 32	**58**	14	01-Oct-21
ATA 32	**59**	14	01-Oct-21
ATA 32	**60**	14	01-Oct-21
ATA 32	**61**	14	01-Oct-21
ATA 32	**62**	14	01-Oct-21
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ATA 32	**66**	14	01-Oct-21
ATA 32	**67**	14	01-Oct-21
ATA 32	**68**	14	01-Oct-21
ATA 32	**69**	14	01-Oct-21
ATA 32	**70**	14	01-Oct-21
ATA 32	**71**	14	01-Oct-21
ATA 32	**72**	14	01-Oct-21
ATA 32	**73**	14	01-Oct-21
ATA 32	**74**	14	01-Oct-21
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ATA 33	**2**	14	01-Oct-21
ATA 33	**3**	14	01-Oct-21
ATA 33	**4**	14	01-Oct-21
ATA 33	**5**	14	01-Oct-21
ATA 33	**6**	14	01-Oct-21
ATA 33	**7**	14	01-Oct-21
ATA 33	**8**	14	01-Oct-21
ATA 33	**9**	14	01-Oct-21
ATA 33	**10**	14	01-Oct-21
ATA 33	**11**	14	01-Oct-21
ATA 33	**12**	14	01-Oct-21
ATA 33	**13**	14	01-Oct-21
ATA 33	**14**	14	01-Oct-21
ATA 33	**15**	14	01-Oct-21
ATA 33	**16**	14	01-Oct-21
ATA 33	**17**	14	01-Oct-21
ATA 33	**18**	14	01-Oct-21
ATA 33	**19**	14	01-Oct-21
ATA 33	**20**	14	01-Oct-21
ATA 33	**21**	14	01-Oct-21
ATA 33	**22**	14	01-Oct-21
ATA 33	**23**	14	01-Oct-21
ATA 33	**24**	14	01-Oct-21
ATA 33	**25**	14	01-Oct-21
ATA 33	**26**	14	01-Oct-21
ATA 33	**27**	14	01-Oct-21
ATA 33	**28**	14	01-Oct-21
ATA 33	**29**	14	01-Oct-21
ATA 33	**30**	14	01-Oct-21

(continued)

THE CIVIL AVIATION AUTHORITY OF THAILAND

Chapter	Page	Revision	Date
ATA 33	**31**	14	01-Oct-21
ATA 33	**32**	14	01-Oct-21
ATA 33	**33**	14	01-Oct-21
ATA 33	**34**	14	01-Oct-21
ATA 33	**35**	14	01-Oct-21
ATA 33	**36**	14	01-Oct-21
ATA 33	**37**	14	01-Oct-21
ATA 33	**38**	14	01-Oct-21
ATA 33	**39**	14	01-Oct-21
ATA 33	**40**	14	01-Oct-21
ATA 33	**41**	14	01-Oct-21
ATA 34	**1**	14	01-Oct-21
ATA 34	**2**	14	01-Oct-21
ATA 34	**3**	14	01-Oct-21
ATA 34	**4**	14	01-Oct-21
ATA 34	**5**	14	01-Oct-21
ATA 34	**6**	14	01-Oct-21
ATA 34	**7**	14	01-Oct-21
ATA 34	**8**	14	01-Oct-21
ATA 34	**9**	14	01-Oct-21
ATA 34	**10**	14	01-Oct-21
ATA 34	**11**	14	01-Oct-21
ATA 34	**12**	14	01-Oct-21
ATA 34	**13**	15	29-Apr-24
ATA 34	**14**	14	01-Oct-21
ATA 34	**15**	15	29-Apr-24
ATA 34	**16**	14	01-Oct-21
ATA 34	**17**	14	01-Oct-21
ATA 34	**18**	14	01-Oct-21
ATA 34	**19**	14	01-Oct-21
ATA 34	**20**	14	01-Oct-21
ATA 34	**21**	14	01-Oct-21
ATA 34	**22**	14	01-Oct-21
ATA 34	**23**	14	01-Oct-21
ATA 34	**24**	14	01-Oct-21
ATA 34	**25**	15	29-Apr-24
ATA 34	**26**	14	01-Oct-21
ATA 34	**27**	14	01-Oct-21
ATA 34	**28**	15	29-Apr-24
ATA 34	**29**	14	01-Oct-21
ATA 34	**30**	14	01-Oct-21
ATA 34	**31**	14	01-Oct-21
ATA 34	**32**	14	01-Oct-21
ATA 34	**33**	14	01-Oct-21
ATA 34	**34**	14	01-Oct-21
ATA 34	**35**	14	01-Oct-21
ATA 34	**36**	14	01-Oct-21
ATA 34	**37**	14	01-Oct-21
ATA 34	**38**	14	01-Oct-21
ATA 34	**39**	14	01-Oct-21
ATA 34	**40**	14	01-Oct-21
ATA 34	**41**	14	01-Oct-21
ATA 34	**42**	14	01-Oct-21
ATA 34	**43**	14	01-Oct-21
ATA 34	**44**	14	01-Oct-21
ATA 34	**45**	14	01-Oct-21
ATA 34	**46**	14	01-Oct-21
ATA 34	**47**	14	01-Oct-21
ATA 34	**48**	14	01-Oct-21
ATA 34	**49**	14	01-Oct-21
ATA 34	**50**	14	01-Oct-21
ATA 34	**51**	14	01-Oct-21
ATA 34	**52**	14	01-Oct-21
ATA 34	**53**	14	01-Oct-21
ATA 34	**54**	14	01-Oct-21
ATA 35	**1**	15	29-Apr-24
ATA 35	**2**	14	01-Oct-21
ATA 35	**3**	14	01-Oct-21
ATA 35	**4**	14	01-Oct-21
ATA 35	**5**	14	01-Oct-21
ATA 35	**6**	14	01-Oct-21
ATA 35	**7**	14	01-Oct-21
ATA 35	**8**	14	01-Oct-21
ATA 35	**9**	14	01-Oct-21
ATA 35	**10**	14	01-Oct-21
ATA 35	**11**	14	01-Oct-21

(continued)

CIVIL AVIATION AUTHORITY OF THAILAND

Chapter	Page	Revision	Date
ATA 35	**12**	15	29-Apr-24
ATA 35	**13**	15	29-Apr-24
ATA 35	**14**	15	29-Apr-24
ATA 38	**1**	14	01-Oct-21
ATA 38	**2**	14	01-Oct-21
ATA 38	**3**	14	01-Oct-21
ATA 38	**4**	14	01-Oct-21
ATA 38	**5**	14	01-Oct-21
ATA 38	**6**	14	01-Oct-21
ATA 38	**7**	14	01-Oct-21
ATA 42	**1**	14	01-Oct-21
ATA 42	**2**	14	01-Oct-21
ATA 42	**3**	14	01-Oct-21
ATA 42	**4**	14	01-Oct-21
ATA 42	**5**	14	01-Oct-21
ATA 42	**6**	14	01-Oct-21
ATA 42	**7**	14	01-Oct-21
ATA 42	**8**	14	01-Oct-21
ATA 42	**9**	14	01-Oct-21
ATA 42	**10**	14	01-Oct-21
ATA 42	**11**	14	01-Oct-21
ATA 44	**1**	15	29-Apr-24
ATA 44	**2**	15	29-Apr-24
ATA 44	**3**	14	01-Oct-21
ATA 44	**4**	14	01-Oct-21
ATA 44	**5**	14	01-Oct-21
ATA 44	**6**	14	01-Oct-21
ATA 44	**7**	15	29-Apr-24
ATA 44	**8**	15	29-Apr-24
ATA 44	**9**	15	29-Apr-24
ATA 44	**10**	15	29-Apr-24
ATA 44	**11**	14	01-Oct-21
ATA 44	**12**	14	01-Oct-21
ATA 44	**13**	14	01-Oct-21
ATA 44	**14**	14	01-Oct-21
ATA 44	**15**	14	01-Oct-21
ATA 44	**16**	15	29-Apr-24
ATA 44	**17**	14	01-Oct-21
ATA 44	**18**	14	01-Oct-21
ATA 44	**19**	14	01-Oct-21
ATA 44	**20**	14	01-Oct-21
ATA 44	**21**	14	01-Oct-21
ATA 44	**22**	14	01-Oct-21
ATA 44	**23**	14	01-Oct-21
ATA 44	**24**	14	01-Oct-21
ATA 44	**25**	14	01-Oct-21
ATA 45	**1**	14	01-Oct-21
ATA 45	**2**	14	01-Oct-21
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ATA 46	**2**	15	29-Apr-24
ATA 46	**3**	15	29-Apr-24
ATA 46	**4**	15	29-Apr-24
ATA 46	**5**	14	01-Oct-21
ATA 47	**1**	14	01-Oct-21
ATA 47	**2**	14	01-Oct-21
ATA 47	**3**	14	01-Oct-21
ATA 47	**4**	14	01-Oct-21
ATA 49	**1**	14	01-Oct-21
ATA 49	**2**	15	29-Apr-24
ATA 49	**3**	14	01-Oct-21
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ATA 49	**6**	14	01-Oct-21
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ATA 49	**11**	14	01-Oct-21
ATA 49	**12**	14	01-Oct-21
ATA 49	**13**	14	01-Oct-21
ATA 49	**14**	14	01-Oct-21
ATA 49	**15**	14	01-Oct-21
ATA 49	**16**	14	01-Oct-21
ATA 50	**1**	15	29-Apr-24
ATA 50	**2**	15	29-Apr-24

(continued)

CIVIL AVIATION AUTHORITY OF THAILAND

UNCONTROLLED IF DOWNLOADED OR PRINTED

Chapter	Page	Revision	Date	Chapter	Page	Revision	Date
ATA 50	3	14	01-Oct-21	ATA 52	35	14	01-Oct-21
ATA 50	4	15	29-Apr-24	ATA 52	36	14	01-Oct-21
ATA 50	5	15	29-Apr-24	ATA 52	37	14	01-Oct-21
ATA 50	6	15	29-Apr-24	ATA 52	38	14	01-Oct-21
ATA 52	1	14	01-Oct-21	ATA 52	39	14	01-Oct-21
ATA 52	2	14	01-Oct-21	ATA 52	40	14	01-Oct-21
ATA 52	3	14	01-Oct-21	ATA 52	41	14	01-Oct-21
ATA 52	4	15	29-Apr-24	ATA 52	42	14	01-Oct-21
ATA 52	5	15	29-Apr-24	ATA 52	43	14	01-Oct-21
ATA 52	6	14	01-Oct-21	ATA 52	44	14	01-Oct-21
ATA 52	7	14	01-Oct-21	ATA 57	1	14	01-Oct-21
ATA 52	8	14	01-Oct-21	ATA 57	2	14	01-Oct-21
ATA 52	9	14	01-Oct-21	ATA 73	1	15	29-Apr-24
ATA 52	10	14	01-Oct-21	ATA 73	2	14	01-Oct-21
ATA 52	11	14	01-Oct-21	ATA 73	3	14	01-Oct-21
ATA 52	12	14	01-Oct-21	ATA 73	4	14	01-Oct-21
ATA 52	13	14	01-Oct-21	ATA 73	5	15	29-Apr-24
ATA 52	14	14	01-Oct-21	ATA 73	6	15	29-Apr-24
ATA 52	15	14	01-Oct-21	ATA 73	7	15	29-Apr-24
ATA 52	16	14	01-Oct-21	ATA 73	8	14	01-Oct-21
ATA 52	17	14	01-Oct-21	ATA 73	9	14	01-Oct-21
ATA 52	18	14	01-Oct-21	ATA 74	1	14	01-Oct-21
ATA 52	19	14	01-Oct-21	ATA 74	2	14	01-Oct-21
ATA 52	20	14	01-Oct-21	ATA 75	1	15	29-Apr-24
ATA 52	21	14	01-Oct-21	ATA 75	2	15	29-Apr-24
ATA 52	22	14	01-Oct-21	ATA 75	3	15	29-Apr-24
ATA 52	23	14	01-Oct-21	ATA 75	4	14	01-Oct-21
ATA 52	24	14	01-Oct-21	ATA 75	5	15	29-Apr-24
ATA 52	25	14	01-Oct-21	ATA 75	6	14	01-Oct-21
ATA 52	26	14	01-Oct-21	ATA 75	7	14	01-Oct-21
ATA 52	27	14	01-Oct-21	ATA 75	8	14	01-Oct-21
ATA 52	28	14	01-Oct-21	ATA 75	9	14	01-Oct-21
ATA 52	29	14	01-Oct-21	ATA 77	1	14	01-Oct-21
ATA 52	30	14	01-Oct-21	ATA 77	2	14	01-Oct-21
ATA 52	31	14	01-Oct-21	ATA 77	3	14	01-Oct-21
ATA 52	32	14	01-Oct-21	ATA 78	1	14	01-Oct-21
ATA 52	33	14	01-Oct-21	ATA 78	2	14	01-Oct-21
ATA 52	34	14	01-Oct-21	ATA 78	3	14	01-Oct-21

(continued)

THE CIVIL AVIATION AUTHORITY OF THAILAND

Chapter	Page	Revision	Date	Chapter	Page	Revision	Date
ATA 78	4	14	01-Oct-21	ATA 32	15	14	01-Oct-21
ATA 78	5	14	01-Oct-21	ATA 32	16	14	01-Oct-21
ATA 78	6	14	01-Oct-21	ATA 32	17	14	01-Oct-21
ATA 78	7	14	01-Oct-21	ATA 32	18	15	29-Apr-24
ATA 78	8	14	01-Oct-21	ATA 32	19	14	01-Oct-21
ATA 79	1	14	01-Oct-21	ATA 32	20	15	29-Apr-24
ATA 79	2	14	01-Oct-21	ATA 32	21	14	01-Oct-21
ATA 79	3	14	01-Oct-21	ATA 32	22	14	01-Oct-21
ATA 79	4	14	01-Oct-21	ATA 32	23	14	01-Oct-21
ATA 79	5	14	01-Oct-21	ATA 32	24	14	01-Oct-21
ATA 79	6	14	01-Oct-21	ATA 32	25	14	01-Oct-21
ATA 80	1	14	01-Oct-21	ATA 32	26	14	01-Oct-21
ATA 80	2	14	01-Oct-21	ATA 32	27	14	01-Oct-21
Section 3	1	14	01-Oct-21	ATA 32	28	14	01-Oct-21
Section 3	2	14	01-Oct-21	ATA 32	29	14	01-Oct-21
Section 3	3	14	01-Oct-21	ATA 32	30	14	01-Oct-21
ATA 21	1	14	01-Oct-21	ATA 32	31	14	01-Oct-21
ATA 21	2	14	01-Oct-21	ATA 33	1	14	01-Oct-21
ATA 21	3	14	01-Oct-21	ATA 33	2	14	01-Oct-21
ATA 21	4	14	01-Oct-21	ATA 33	3	14	01-Oct-21
ATA 21	5	14	01-Oct-21	ATA 33	4	14	01-Oct-21
ATA 23	1	14	01-Oct-21	ATA 33	5	14	01-Oct-21
ATA 23	2	14	01-Oct-21	ATA 33	6	14	01-Oct-21
ATA 23	3	14	01-Oct-21	ATA 33	7	14	01-Oct-21
ATA 32	1	14	01-Oct-21	ATA 33	8	14	01-Oct-21
ATA 32	2	14	01-Oct-21	ATA 33	9	14	01-Oct-21
ATA 32	3	14	01-Oct-21	ATA 33	10	14	01-Oct-21
ATA 32	4	14	01-Oct-21	ATA 33	11	14	01-Oct-21
ATA 32	5	14	01-Oct-21	ATA 33	12	14	01-Oct-21
ATA 32	6	14	01-Oct-21	ATA 33	13	14	01-Oct-21
ATA 32	7	14	01-Oct-21	ATA 52	1	14	01-Oct-21
ATA 32	8	14	01-Oct-21	ATA 52	2	14	01-Oct-21
ATA 32	9	14	01-Oct-21	ATA 52	3	14	01-Oct-21
ATA 32	10	14	01-Oct-21	ATA 52	4	14	01-Oct-21
ATA 32	11	14	01-Oct-21	ATA 52	5	14	01-Oct-21
ATA 32	12	14	01-Oct-21	ATA 52	6	15	29-Apr-24
ATA 32	13	14	01-Oct-21	ATA 52	7	14	01-Oct-21
ATA 32	14	14	01-Oct-21	ATA 52	8	14	01-Oct-21

(continued)

THE CIVIL AVIATION AUTHORITY OF THAILAND

Chapter	Page	Revision	Date	Chapter	Page	Revision	Date
ATA 52	9	14	01-Oct-21	ATA 56	8	14	01-Oct-21
ATA 52	10	14	01-Oct-21	ATA 56	9	14	01-Oct-21
ATA 52	11	14	01-Oct-21	ATA 56	10	14	01-Oct-21
ATA 52	12	14	01-Oct-21	ATA 56	11	14	01-Oct-21
ATA 52	13	14	01-Oct-21	ATA 56	12	14	01-Oct-21
ATA 53	1	14	01-Oct-21	ATA 56	13	14	01-Oct-21
ATA 53	2	14	01-Oct-21	ATA 57	1	14	01-Oct-21
ATA 53	3	14	01-Oct-21	ATA 57	2	14	01-Oct-21
ATA 55	1	14	01-Oct-21	ATA 57	3	14	01-Oct-21
ATA 55	2	14	01-Oct-21	ATA 57	4	14	01-Oct-21
ATA 55	3	14	01-Oct-21	ATA 57	5	14	01-Oct-21
ATA 55	4	14	01-Oct-21	ATA 57	6	14	01-Oct-21
ATA 55	5	14	01-Oct-21	ATA 57	7	14	01-Oct-21
ATA 55	6	14	01-Oct-21	ATA 57	8	14	01-Oct-21
ATA 55	7	14	01-Oct-21	ATA 57	9	14	01-Oct-21
ATA 55	8	14	01-Oct-21	ATA 57	10	14	01-Oct-21
ATA 55	9	14	01-Oct-21	ATA 57	11	14	01-Oct-21
ATA 55	10	14	01-Oct-21	ATA 57	12	14	01-Oct-21
ATA 55	11	14	01-Oct-21	ATA 57	13	14	01-Oct-21
ATA 55	12	14	01-Oct-21	ATA 57	14	14	01-Oct-21
ATA 55	13	14	01-Oct-21	ATA 57	15	14	01-Oct-21
ATA 55	14	14	01-Oct-21	ATA 57	16	14	01-Oct-21
ATA 55	15	14	01-Oct-21	ATA 57	17	14	01-Oct-21
ATA 55	16	14	01-Oct-21	ATA 57	18	14	01-Oct-21
ATA 55	17	14	01-Oct-21	ATA 57	19	14	01-Oct-21
ATA 55	18	14	01-Oct-21	ATA 57	20	14	01-Oct-21
ATA 55	19	14	01-Oct-21	ATA 57	21	14	01-Oct-21
ATA 55	20	14	01-Oct-21	ATA 57	22	14	01-Oct-21
ATA 55	21	14	01-Oct-21	ATA 57	23	14	01-Oct-21
ATA 55	22	14	01-Oct-21	ATA 57	24	14	01-Oct-21
ATA 55	23	14	01-Oct-21	ATA 57	25	14	01-Oct-21
ATA 56	1	14	01-Oct-21	ATA 57	26	14	01-Oct-21
ATA 56	2	14	01-Oct-21	ATA 57	27	14	01-Oct-21
ATA 56	3	14	01-Oct-21	ATA 57	28	14	01-Oct-21
ATA 56	4	14	01-Oct-21	ATA 57	29	14	01-Oct-21
ATA 56	5	14	01-Oct-21	ATA 57	30	14	01-Oct-21
ATA 56	6	14	01-Oct-21	ATA 57	31	14	01-Oct-21
ATA 56	7	14	01-Oct-21	ATA 57	32	14	01-Oct-21

(continued)

UNCONTROLLED IF DOWNLOADED OR PRINTED

Chapter	Page	Revision	Date
ATA 57	33	14	01-Oct-21
ATA 57	34	14	01-Oct-21
ATA 57	35	14	01-Oct-21
ATA 57	36	14	01-Oct-21
ATA 57	37	14	01-Oct-21
ATA 57	38	14	01-Oct-21
ATA 57	39	14	01-Oct-21
ATA 57	40	14	01-Oct-21
ATA 57	41	14	01-Oct-21
ATA 57	42	14	01-Oct-21
ATA 57	43	14	01-Oct-21
ATA 57	44	14	01-Oct-21
ATA 57	45	14	01-Oct-21
ATA 57	46	14	01-Oct-21
ATA 57	47	14	01-Oct-21
ATA 57	48	14	01-Oct-21
ATA 57	49	14	01-Oct-21
ATA 57	50	14	01-Oct-21
ATA 57	51	14	01-Oct-21
ATA 57	52	14	01-Oct-21
ATA 57	53	14	01-Oct-21
ATA 57	54	14	01-Oct-21
ATA 57	55	14	01-Oct-21
ATA 57	56	14	01-Oct-21
ATA 57	57	14	01-Oct-21
ATA 57	58	14	01-Oct-21
ATA 57	59	14	01-Oct-21
ATA 57	60	14	01-Oct-21
ATA 57	61	14	01-Oct-21
ATA 57	62	14	01-Oct-21
ATA 57	63	14	01-Oct-21
ATA 57	64	14	01-Oct-21
ATA 57	65	14	01-Oct-21
ATA 57	66	14	01-Oct-21
ATA 57	67	14	01-Oct-21
ATA 57	68	14	01-Oct-21
ATA 57	69	14	01-Oct-21
ATA 57	70	14	01-Oct-21
ATA 57	71	14	01-Oct-21
ATA 57	72	14	01-Oct-21
ATA 57	73	14	01-Oct-21
ATA 57	74	14	01-Oct-21
ATA 57	75	14	01-Oct-21
ATA 57	76	14	01-Oct-21
ATA 57	77	14	01-Oct-21
ATA 57	78	14	01-Oct-21
ATA 57	79	14	01-Oct-21
ATA 57	80	14	01-Oct-21
ATA 57	81	14	01-Oct-21
ATA 57	82	14	01-Oct-21
ATA 57	83	14	01-Oct-21
ATA 57	84	14	01-Oct-21
ATA 57	85	14	01-Oct-21
ATA 57	86	14	01-Oct-21
ATA 57	87	14	01-Oct-21
ATA 57	88	14	01-Oct-21
ATA 57	89	14	01-Oct-21
ATA 57	90	14	01-Oct-21
ATA 57	91	14	01-Oct-21
ATA 57	92	14	01-Oct-21
ATA 57	93	14	01-Oct-21
ATA 57	94	14	01-Oct-21
ATA 57	95	14	01-Oct-21
ATA 57	96	14	01-Oct-21
ATA 57	97	14	01-Oct-21
ATA 57	98	14	01-Oct-21
ATA 57	99	14	01-Oct-21
ATA 57	100	14	01-Oct-21
ATA 57	101	14	01-Oct-21
ATA 57	102	14	01-Oct-21
ATA 57	103	14	01-Oct-21
ATA 57	104	14	01-Oct-21
ATA 57	105	14	01-Oct-21
ATA 57	106	14	01-Oct-21
ATA 57	107	14	01-Oct-21
ATA 57	108	14	01-Oct-21

(continued)

Chapter	Page	Revision	Date	Chapter	Page	Revision	Date
ATA 57	**109**	14	01-Oct-21	ATA 78	**5**	14	01-Oct-21
ATA 57	**110**	14	01-Oct-21	ATA 78	**6**	14	01-Oct-21
ATA 57	**111**	14	01-Oct-21	ATA 78	**7**	14	01-Oct-21
ATA 57	**112**	14	01-Oct-21	ATA 78	**8**	14	01-Oct-21
ATA 57	**113**	14	01-Oct-21	ATA 78	**9**	14	01-Oct-21
ATA 57	**114**	14	01-Oct-21	ATA 78	**10**	14	01-Oct-21
ATA 57	**115**	14	01-Oct-21	ATA 78	**11**	14	01-Oct-21
ATA 71	**1**	14	01-Oct-21	ATA 78	**12**	14	01-Oct-21
ATA 71	**2**	14	01-Oct-21	ATA 78	**13**	14	01-Oct-21
ATA 71	**3**	14	01-Oct-21	ATA 78	**14**	14	01-Oct-21
ATA 78	**1**	14	01-Oct-21	ATA 78	**15**	14	01-Oct-21
ATA 78	**2**	14	01-Oct-21	Section 4	**1**	14	01-Oct-21
ATA 78	**3**	14	01-Oct-21	Section 4	**2**	15	29-Apr-24
ATA 78	**4**	14	01-Oct-21	Section 4	**3**	15	29-Apr-24

THE CIVIL AVIATION AUTHORITY OF THAILAND

Table of Contents

Section 0 INTRODUCTION .... Section 0-1
Table Of Contents .... Section 0-1
General .... Section 0-2
  Foreword .... Section 0-2
  Purpose and Scope .... Section 0-2
  Document Content and Organization .... Section 0-2
  Airplane Effectivities .... Section 0-4
  Revisions .... Section 0-5
    Repid Content Revision .... Section 0-5
    Distribution .... Section 0-5
    MEL Revision Process .... Section 0-6
    MEL Work Instruction .... Section 0-7

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General

Foreword

The 787 Minimum Equipment List is the property of Thai Airways International Public Company Limited. The manual contents are under the responsibility of THAI Lean Operations & Fuel Efficiency (BKKPC). Since the manual includes information regarding THAI policies and methods of operation, it is prohibited to reveal its contents to persons not associated with the Company. It is a responsibility of each manual holder to inform BKKPC of any discrepancy found in the manual at:

Tel	(02) 545-2883
Fax	(02) 545-3851
E-mail	**bkkpcoffice@thaiairways.com**
SITA	BKKPCTG

For paper format of this manual, it is also a responsibility of each manual holder to guard the manual against damage and loss and to keep it up to date by inserting all revisions as soon as they are received.

Purpose and Scope

This manual is specifically prepared for dispatching and contains information and instructions for operation of the 787. The procedures in this manual cover the regulations issued by The Civil Aviation Authority of Thailand (CAAT) as applicable and specific to this type of aircraft. Although these procedures must be adhered to, nothing should limit personnel from acting on their own best judgement in an emergency.

Document Content and Organization

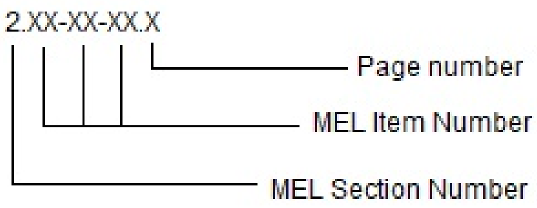
The MEL is divided into sections as follows:

- SECTION 0—INTRODUCTION
- SECTION 1—EICAS MESSAGES

  This section provides a cross reference between EICAS messages and MEL items which may provide dispatch relief. The EICAS message list is in alphabetic order and includes all of the current EICAS messages.

- SECTION 2—MEL

  The page numbering uses the MEL item number as follows:



For example, MEL Item 21-51-01 would be found on page 2.21-51-01.1 in Section 2.

Each MEL item is separated by a double horizontal line, with each applicable sub item separated by a single horizontal line. The MEL entry is separated from applicable procedures by a dashed horzontal line.

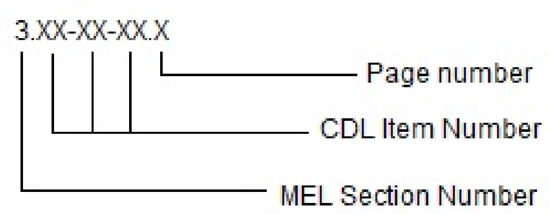
When appropriate, procedures follow the MEL item. MEL items may not have suggested procedures for the following reasons:

- The procedure is obvious.
- The MMEL (Master Minimum Equipment List) does not require that a procedure be established.

MAINTENANCE NOTES and OPERATIONS NOTES in this document are advisory in nature and should not be considered as required Maintenance or Operations procedures.

- SECTION 3—CDL

The page numbering uses the CDL item number as follows:



For example, CDL item 52-11-01 would be found on page 3.52-11-01.1 in Section 3.

When appropriate, illustrations, system effects and performance adjustments follow the CDL item.

- SECTION 4—SPECIAL OPERATIONS

This section provides the equipment required for various operations.

Airplane Effectivities

Differences in airplane configuration are expressed through the use of airplane effectivities which lists airplane registration numbers applicable to particular contents.

Airplane registration numbers are listed in alpha-numeric order. A list of more than four consecutive registration numbers is presented as a range of airplanes. A comma is used in the list to indicate a break in the range, e.g. the list of “TQA to TQC, F” includes the alphabets A through C and F of the “TQ” series.

An airplane list of an entire fleet may, in some cases, be expressed as the fleet itself, e.g. the list of “-8, -9” includes all airplanes in the -8 and -9 fleets.

For PDF format of this document, airplane effectivities are shown adjacent to the applicable contents on the left for even pages and on the right for odd pages. In some rare cases where the effectivity includes several airplane registration numbers or models, the effectivity may extend below its content and slightly cover the area associated with the following content.

For HTML format of this document, airplane effectivities are distinguished by text colors and the airplane lists will be displayed in a pop-up note when the cursor moves over the respective contents.

Example:

OPERATIONS (O)

Note:
1. PACK R or PACK MODE R advisory message may be displayed.
2. The right pack will remain OFF and will not operate normally until airspeed is sufficient to support ram air duct cooling (approximately 120 knots). PACK R or PACK MODE R advisory message will blank when ram air duct cooling is available.
3. Before engine start RAM FAN L, HYD PUMP C1, HYD PUMP DEM R and FUEL PUMP CENTER L status messages may be displayed.

In this example, the effectivity TQA to TQD applies only to Note 3 (Before engine start RAM FAN R…), while the effectivity TQE to TQF applies only to Note 4 (Before engine start RAM FAN L…). Note 1 and 2 apply to all 787 airplanes.

Revisions

Revisions will be issued as necessary by the Lean Operations & Fuel Efficiency Department (BKKPC), and published the distributed by the Document Standard Team (BKK1A-B). The revision procedure shall be in accordance with the MEL Revision Process.

Repid Content Revision

As a means to promptly provide operational information/instructions to flight crew when normal revisions cannot be published in time, a brief description together with necessary operational instructions will be published in the Operations Briefing Card (OBC).

The published information/instructions:

- must not be less restrictive than the current revision of MEL
- may contain aircraft effectivity update to an existing MEL item.

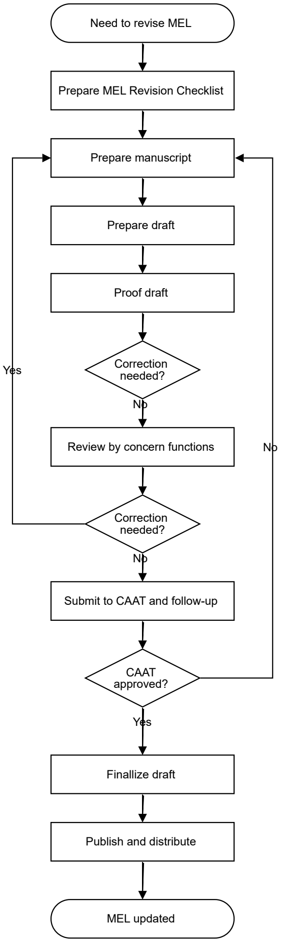
The OBC is located inside the front cover of the Technical Log on each aircraft. The content will later be incorporated into a future revision of MEL as applicable.

Distribution

The 787 MEL is available at THAISphere and https://vpn.thaiairways.com. It is also available on the following locations and formats:

Aircraft	Portable EFB
CAAT	**EMPIC System**
QA Department	BKKTA: QUALITY ASSURANCE via Operations eLibrary – Pilot Docs Portal
Engineering	BKKLC: LINE MAINTENANCE via Operations eLibrary – Pilot Docs Portal

MEL Revision Process


Need to revise MEL
Prepare MEL Revision Checklist
Prepare manuscript
Prepare draft
Proof draft
Correction needed?
Yes
No
Review by concern functions
No
Correction needed?
No
Submit to CAAT and follow-up
CAAT approved?
Yes
Finallize draft
Publish and distribute
MEL updated

Steps	**Controlling documents**	**Responsible person/func**
1	-	PC
2	-	PC
3	-	1A-B
4	-	1A-B, PC
	-	
5		JA, Technical Pilot
	-	
6	-	PC
	-	
7	-	PC, 1A-B
8	-	1A-B

MEL Work Instruction

This process shall be followed when MEL need to be updated.

MEL shall be updated as soon as the new MMEL/DDG or new directive from CAAT have been issued. Normally this should not exceed 90 days.

Form SQMR 18 shall be used to record process and obtain signature of responsible person to each revision.

1. Prepare MEL Revision Checklist
    - PC prepares the MEL Revision Checklist which will be used by PC and 1A-B to assist in preparing manuscripts and drafts, and to record revision progress.
2. Prepare manuscript
    - PC prepares the manuscript based on MMEL revision and THAI policy, considering CAAT and other applicable authority regulations. The MEL shall not be less restrictive than the MMEL.
3. Prepare draft
    - PC and 1A-B review the draft for editorial and technical correctness. If the draft needs correction, go back to step 3.
4. Proof draft
    - PC and 1A-B review the draft for editorial and technical correctness. If the draft needs correction, go back to step 3.
5. Review by concerned functions
    - PC submits the draft to JA and Technical Pilot for a review. The MEL Revision Review Form (OU-FM11) and Revision Approval Records & Minutes (SQMR-FM18) are used to record acknowledgement/acceptance of the draft by the concerned functions. If either JA or Technical Pilot rejects the draft, go back to step 2.
6. Submit to CAAT for approval
    - PC submits the draft to CAAT for approval and follows up with responsible CAAT inspectors. If CAAT rejects the draft, go back to step 2.
7. Finalize draft
    - Once the MEL revision is approved, PC collects approval documents from CAAT. 1A-B incorporates the approval documents into the MEL revision.
8. Publish and distribute
    - 1A-B publishes and distributes the MEL revision. PC files manuscript and approval form for record and future reference.

Bangkok, 07 August 2021

THAI AIRWAYS INTERNATIONAL PUBLIC COMPANY LIMITED

Operations (DO)

Anirute Sangrit

Capt. Anirute Sangrit

Chief

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Table of Contents

Section 1 EICAS MESSAGES . . . . Section 1-1

Table Of Contents . . . . Section 1-1

Introduction . . . . Section 1-2
  EICAS Messages Cross Reference List . . . . Section 1-2
  EICAS Messages . . . . Section 1-2
  Maintenance Level Messages . . . . Section 1-3
  Considerations for Dispatch with Displayed EICAS and CMCF Messages . . . . Section 1-4
  Considerations for Dispatch Using Synoptic Displays . . . . Section 1-4

EICAS Message Cross Reference List . . . . Section 1-5

Introduction

EICAS Messages Cross Reference List

A Cross Reference List of Engine Indication and Crew Alerting System (EICAS) messages and corresponding MEL items is provided in this section. The Cross Reference List is intended to assist flight crew and maintenance personnel in quickly identifying the proper MEL item to consult for possible dispatch relief.

All EICAS messages at Status level or higher are listed by message text in alphabetic order. A description of the information provided in each column of the Cross Reference List follows.

Message Text	This column alphabetically lists each message exactly as they would appear on EICAS.
Level	The appropriate EICAS message level is listed: Warning, Caution, Advisory, Memo, Comm, or Status.
MEL Item	This column lists the appropriate MEL item(s) to consult for possible dispatch relief with the associated message displayed. EICAS messages that do not have a specific MEL item to allow dispatch are listed with one of the following cross references: **N/A** Not Applicable: There is no MEL item listed because the message does not indicate a system failure. **None** There is no MEL item for the failure condition indicated by this message (NO GO).

EICAS Messages

EICAS is the primary means of displaying airplane system information to the flight crew. EICAS consolidates engine and subsystem indications and provides a centrally located crew alerting function. EICAS displays System Alerts (Warning, Caution, and Advisory), Communication Alerts, Memo messages, and Status messages.

Warning	A non-normal operational or system condition displayed in red text accompanied by annunciation of the master warning lights and an aural tone. Immediate crew awareness and corrective action is required.
Caution	A non-normal operational or system condition displayed in amber text accompanied by annunciation of the master caution lights and an aural tone. Immediate crew awareness is required and corrective action may be required.
Advisory	A non-normal operational or system condition displayed in amber text without other visual or aural annunciations. Routine crew awareness is required and corrective action may be required.

Comm	A reminder of normal incoming flight crew communications displayed in white text.
Memo	A reminder of a normal condition in white text that indicates the current state of certain manually and automatically configured airplane systems.
Status	A system condition which affects airplane dispatch, displayed in white text on the MFD status page. Status messages are checked prior to engine start and the condition should be corrected or dispatched per the THAI MEL. There are no inflight crew procedures associated with Status messages.

Maintenance Level Messages

Maintenance level messages are not included in the Cross Reference List, since they do not affect the airworthiness release of the airplane. Maintenance level messages are provided by EICAS and the Central Maintenance Computing Function (CMCF) as follows:

Scheduled Maintenance Task (SMT): These are a special category of messages that are uniquely associated with a Certification Maintenance Requirement (CMR) or a Scheduled Maintenance Task (SMT). They are displayed on a special MFD maintenance page. SMT messages are checked as a result of a specified maintenance task defined by the CMR or maintenance program requirement, which also defines a specific time interval when corrective maintenance action is required. There is no requirement to check SMT messages prior to each flight. SMT messages are not included in the Cross Reference List.

Central Maintenance Computing Function (CMCF) Messages: The Central Maintenance Computing Function of the Onboard Maintenance System processes BITE fault reports into maintenance messages. These are nonessential messages that are displayed on Maintenance Laptops or specific flight deck display formats. Maintenance messages are not displayed on EICAS and they are not used to determine the airworthiness of the airplane. They provide diagnostic information useful in troubleshooting or maintenance planning. There are two general types of CMCF maintenance messages: correlated and uncorrelated. Correlated messages are associated with a specific EICAS message or other flight deck effect. Each fault indicated by an EICAS message has at least one correlated maintenance message to assist the maintenance personnel in determining the root cause of the fault indicated on EICAS. Uncorrelated messages do not have a corresponding flight deck effect. Some uncorrelated messages, known as Maintenance Memos, provide information regarding the condition of a redundant component or system that is installed to enhance departure reliability, but is not required for certification. Maintenance Memos provide airline maintenance departments the ability to monitor system degradation and plan appropriate action before annunciation of an EICAS message which affects the airworthiness release of the airplane. CMCF maintenance messages are not included in the Cross Reference List.

Considerations for Dispatch with Displayed EICAS and CMCF Messages

Any monitored faults that affect airplane dispatchability will be displayed on EICAS as a Status or Alert level (Warning, Caution, Advisory) message, with a corresponding correlated maintenance message. System faults displayed at Status level or Alert level should be resolved by MEL compliance or maintenance action prior to engine start. After engine start, EICAS Alert messages are the primary means of alerting the crew to non-normal conditions or improper configuration. Display of an alert message requires accomplishment by the flight crew of any applicable steps in the appropriate non-normal procedure. Conditions which can be resolved by flight crew action may allow continued normal operation. For system faults, following completion of the non-normal procedure and prior to takeoff, the MEL should be consulted to determine if relief is available for continued operation.

Any system faults that result only in a SMT message or a CMCF maintenance message do not require MEL consideration or maintenance action prior to dispatch. They are addressed within company standard maintenance program.

Considerations for Dispatch Using Synoptic Displays

Airplane system faults and/or Common Data Network (CDN) communication faults may result in missing information on synoptic displays. Missing data may include any synoptic display element such as flow bars, pump or valve symbols, and digital indications. Display elements may be absent from one, two, or all three Multi-Function Displays. Missing information on a specific synoptic page caused by an CDN communication fault is not indicative of a fault in the system associated with that synoptic page. Decisions regarding dispatch should be based on EICAS Status or Alert level messages and/or other flight deck effects.

EICAS Message Cross Reference List

Message	Level	MEL Item
A/P BACKDRIVE COLUMN	Caution	22-11-02
A/P BACKDRIVE PEDAL	Caution	22-11-02
A/P BACKDRIVE WHEEL	Caution	22-11-02
A/P DISC WARN SYS	Status	31-51-03
ACM BYPASS VALVE L	Status	21-52-09
ACM BYPASS VALVE R	Status	21-52-09
ACM CPRSR OUTLET SNSR L	Status	21-52-04
ACM CPRSR OUTLET SNSR R	Status	21-52-04
ACP CHANNEL CAPT	Status	23-51-01
ACP CHANNEL F/O	Status	23-51-01
ACP CHANNEL FOBS	Status	23-51-01-03B
ACTUATOR DELTA PRESS	Status	27-02-04
ADS-B OUT	Advisory	34-42-06
ADS-B OUT DATA L	Status	34-42-06
ADS-B OUT DATA R	Status	34-42-06
AHRU ALIGN MODE L	Memo	N/A
AHRU ALIGN MODE L+R	Memo	N/A
AHRU ALIGN MODE R	Memo	N/A
AHRU ATT MODE L	Advisory	34-21-01-02
AHRU ATT MODE R	Advisory	34-21-01-02
AHRU L	Status	34-21-01-02
AHRU R	Status	34-21-01-02
AILERON SYS	Status	None
AIR/GROUND	Status	None
AIR/GROUND SENSOR	Status	32-09-01
AIR/GROUND SYS	Status	None
AIRSPEED LOW	Caution	N/A
AIRSPEED UNRELIABLE	Advisory	None

Message	Level	MEL Item
ALTITUDE ALERT	Caution	N/A
ALTITUDE ALERT SYS	Status	**34-16-01**
ALTITUDE CALLOUTS	Advisory	**34-42-05-01**
ALTN ATTITUDE CAPT	Advisory	N/A
ALTN ATTITUDE FO	Advisory	N/A
ALTN CONTROL WHEEL XDCR	Status	**27-11-02**
ALTN GEAR EXTEND	Status	**32-35-01**
ALTN PITCH TRIM SWITCH	Status	**27-41-02**
ANTI-ICE CAC INLET L	Status	**30-22-01**
ANTI-ICE CAC INLET R	Status	**30-22-01**
ANTI-ICE DET WING	Advisory	**30-81-01**
ANTI-ICE ENG L	Advisory	**30-21-01**
ANTI-ICE ENG R	Advisory	**30-21-01**
ANTI-ICE LEAK ENG L	Caution	None
ANTI-ICE LEAK ENG R	Caution	None
ANTI-ICE LOSS ENG L	Advisory	**30-21-01**
ANTI-ICE LOSS ENG R	Advisory	**30-21-01**
ANTI-ICE ON	Advisory	N/A
ANTI-ICE PACKS	Advisory	**30-22-01**
ANTI-ICE WING	Caution	**30-11-01**
ANTISKID	Advisory	None
ANTISKID	Status	None
ANTISKID 1	Status	**32-42-02**
ANTISKID 2	Status	**32-42-02**
ANTISKID 3	Status	**32-42-02**
ANTISKID 4	Status	**32-42-02**
ANTISKID 5	Status	**32-42-02**
ANTISKID 6	Status	**32-42-02**

Message	Level	MEL Item
ANTISKID 7	Status	32-42-02
ANTISKID 8	Status	32-42-02
AOA SENSORS	Status	34-12-03-01
APU	Status	49-11-01
APU BATTERY	Advisory	24-31-01
APU CONTROL	Status	49-61-01
APU COOLDOWN	Memo	N/A
APU DOOR	Status	49-15-01
APU LIMIT	Caution	49-11-01
APU OIL QUANTITY	Status	49-94-01
APU REMOTE SHUTDOWN	Status	49-11-01
APU RUNNING	Memo	N/A
APU SHUTDOWN	Advisory	49-11-01
APU START SYS	Status	49-41-01
ATC	Comm Med	N/A
ATTEND CREW REST VALVES	Status	21-29-02
AUDIO GATEWAY UNIT AFT L	Status	None
AUDIO GATEWAY UNIT AFT R	Status	None
AUDIO GATEWAY UNIT FWD L	Status	None
AUDIO GATEWAY UNIT FWD R	Status	23-51-06
AURAL CANCELED	Advisory	N/A
AUTO SPEEDBRAKE	Advisory	27-61-03
AUTO SPEEDBRAKE	Status	27-61-03
AUTOBRAKE	Advisory	32-42-01
AUTOBRAKE	Status	32-42-01
AUTOBRAKE 1	Memo	N/A
AUTOBRAKE 2	Memo	N/A
AUTOBRAKE 3	Memo	N/A

Message	Level	MEL Item
AUTOBRAKE 4	Memo	N/A
AUTOBRAKE MAX	Memo	N/A
AUTOBRAKE RTO	Memo	N/A
AUTOFLIGHT FUNCTION	Status	22-11-01
AUTOPILOT	Caution	N/A
AUTOPILOT BACKDRIVE COLUMN	Status	22-11-02
AUTOPILOT BACKDRIVE PEDAL	Status	22-11-02
AUTOPILOT BACKDRIVE WHEEL	Status	22-11-02
AUTOPILOT DISC	Warning	N/A
AUTOTHROTTLE DISC	Caution	22-31-01
AUTOTHROTTLE L	Advisory	22-31-02
AUTOTHROTTLE R	Advisory	22-31-02
AUTOTHROTTLE SERVO L	Status	22-31-02
AUTOTHROTTLE SERVO R	Status	22-31-02
AUTOTHROTTLE SYS	Status	22-31-01

Message	Level	MEL Item
BANK ANGLE PROTECT	Status	27-02-01
BARO SET DISAGREE	Advisory	N/A
BOTTLE 1 DISCH ENG	Advisory	None
BOTTLE 1 ENG	Status	None
BOTTLE 1 ENG CONFIG	Status	None
BOTTLE 1 ENG L	Status	None
BOTTLE 1 ENG R	Status	None
BOTTLE 1A CARGO PRESS	Status	26-23-01
		26-23-01-03
BOTTLE 1A CARGO SQUIB	Status	26-23-01

Message	Level	MEL Item
BOTTLE 1B CARGO PRESS	Status	26-23-01 26-23-01-03
BOTTLE 1B CARGO SQUIB	Status	26-23-01
BOTTLE 2 DISCH ENG	Advisory	None
BOTTLE 2 ENG	Status	None
BOTTLE 2 ENG CONFIG	Status	None
BOTTLE 2 ENG L	Status	None
BOTTLE 2 ENG R	Status	None
BOTTLE 2A CARGO PRESS	Status	26-23-01 26-23-01-01 26-23-01-03
BOTTLE 2A CARGO SQUIB	Status	26-23-01 26-23-01-01
BOTTLE 2B CARGO PRESS	Status	26-23-01 26-23-01-01 26-23-01-03
BOTTLE 2B CARGO SQUIB	Status	26-23-01 26-23-01-01
BOTTLE 2C CARGO PRESS	Status	26-23-01 26-23-01-01 26-23-01-03
BOTTLE 2C CARGO SQUIB	Status	26-23-01 26-23-01-01
BOTTLE APU	Status	26-22-01
BOTTLE DISCH APU	Advisory	26-22-01
BOTTLE DISCH CARGO	Advisory	26-23-01 26-23-01-01 26-23-01-03

Message	Level	MEL Item
BRAKE 1	Status	**32-45-01**
BRAKE 1 ACTUATOR	Status	**32-45-01-01**
BRAKE 2	Status	**32-45-01**
BRAKE 2 ACTUATOR	Status	**32-45-01-01**
BRAKE 3	Status	**32-45-01**
BRAKE 3 ACTUATOR	Status	**32-45-01-01**
BRAKE 4	Status	**32-45-01**
BRAKE 4 ACTUATOR	Status	**32-45-01-01**
BRAKE 5	Status	**32-45-01**
BRAKE 5 ACTUATOR	Status	**32-45-01-01**
BRAKE 6	Status	**32-45-01**
BRAKE 6 ACTUATOR	Status	**32-45-01-01**
BRAKE 7	Status	**32-45-01**
BRAKE 7 ACTUATOR	Status	**32-45-01-01**
BRAKE 8	Status	**32-45-01**
BRAKE 8 ACTUATOR	Status	**32-45-01-01**
BRAKE CONTROLS	Status	None
BRAKE INDICATION	Status	None
BRAKE TEMP	Advisory	N/A
BRAKE TEMP SYS	Status	**32-46-01**
BRAKE	Advisory	None
BTL 1 DISCH ENG L	Advisory	None
BTL 1 DISCH ENG R	Advisory	None
BTL 2 DISCH ENG L	Advisory	None
BTL 2 DISCH ENG R	Advisory	None

Message	Level	MEL Item
CABIN AIR CPRSR L1	Status	21-51-01
CABIN AIR CPRSR L2	Status	21-51-01
CABIN AIR CPRSR R1	Status	21-51-01
CABIN AIR CPRSR R2	Status	21-51-01
CABIN ALERT	Comm Med	N/A
CABIN ALERT - ECAS	Comm Med	N/A
CABIN ALTITUDE	Warning	N/A
CABIN ALTITUDE AUTO	Caution	21-31-01
CABIN CALL	Comm Med	N/A
CABIN INTERPHONE	Status	44-14-01
CABIN READY	Comm Med	N/A
CABIN TEMP CONTROL L	Status	21-51-09-01
CABIN TEMP CONTROL R	Status	21-51-09-02
CABIN TEMPERATURE	Advisory	N/A
CARGO AFT HEAT SUPPLY VLV	Status	21-27-28
CARGO BULK HEAT SUPPLY VLV	Status	21-44-01
CARGO BULK HEATER	Status	21-44-01
CARGO BULK HEATER 1	Status	21-44-01-01
CARGO BULK HEATER 2	Status	21-44-01-01
CARGO BULK SUPPLY FAN	Status	21-44-01
CARGO FWD EXHAUST FAN	Status	21-43-02
CARGO FWD EXHAUST VLV	Status	21-43-02
CARGO FWD HEATER	Status	21-43-03-01
CARGO FWD HEATER 1	Status	21-43-03-02
CARGO FWD HEATER 2	Status	21-43-03-02
CARGO FWD SUPPLY VLV	Status	21-43-01
CARGO HEAT BULK	Advisory	21-43-03

Message	Level	MEL Item
CARGO HEAT FWD	Advisory	**21-27-02** **21-43-01**
CARGO SQUIB CTRL CHAN 1	Status	**26-23-03**
CARGO SQUIB CTRL CHAN 2	Status	**26-23-03**
CAUTION OBSTACLE	Caution	N/A
CAUTION TERRAIN	Caution	N/A
CCR CABINET COOLING L	Status	None
CCR CABINET COOLING R	Status	None
CCR CABINET L	Status	None
CCR CABINET R	Status	None
CCR FIBER OPTIC XLTR	Status	None
CCR GPM 1L	Status	None
CCR GPM 1R	Status	None
CCR GPM 2L	Status	None
CCR GPM 2R	Status	None
CCR GPM 3L	Status	None
CCR GPM 3R	Status	None
CCR GPM 4L	Status	None
CCR GPM 4R	Status	None
CCR GPM 5L	Status	None
CCR GPM 5R	Status	None
CCR GPM 6L	Status	None
CCR GPM 6R	Status	None
CCR GPM 7L	Status	None
CCR GPM 7R	Status	None
CCR GPM 8L	Status	**42-21-01-01**
CCR GPM 8R	Status	**42-21-01-02**
CCR GRAPHICS GENERATOR	Status	**31-61-02-01**

Message	Level	MEL Item
CCR GPM 1R	Status	None
CCR GPM 2L	Status	None
CCR GPM 2R	Status	None
CCR GPM 3L	Status	None
CCR GPM 3R	Status	None
CCR GPM 4L	Status	None
CCR GPM 4R	Status	None
CCR GPM 5L	Status	None
CCR GPM 5R	Status	None
CCR GPM 6L	Status	None
CCR GPM 6R	Status	None
CCR GPM 7L	Status	None
CCR GPM 7R	Status	None
CCR GPM 8L	Status	**42-21-01-01**
CCR GPM 8R	Status	**42-21-01-02**
CCR GRAPHICS GENERATOR	Status	**31-61-02-01**
CCR NETWORK SWITCH	Status	None
CCR POWER CONTROL MODULE	Status	None
CCS CONFIG	Status	None
CCS GPM SOFTWARE CONFIG	Status	None
CCS HEALTH MANAGEMENT	Status	None
CCS NETWORK A	Status	None
CCS NETWORK B	Status	None
CCS NETWORK SWITCH 3	Status	None
CCS NETWORK SWITCH 4	Status	None
CCS NETWORK SWITCH 5	Status	None
CCS NETWORK SWITCH 6	Status	None
CCS NETWORK SWITCH 7	Status	None

Message	Level	MEL Item
CCS RDC 16 DOOR 2R	Status	None
CCS RDC 16 FAULT	Status	**42-21-02-03**
CCS RDC 17 DOOR 4L	Status	None
CCS RDC 17 FAULT	Status	**42-21-02-03**
CCS RDC 18 DOOR 4R	Status	None
CCS RDC 18 FAULT	Status	**42-21-02-03**
CCS RDC 19 AFT EE BAY	Status	**42-21-02-04B**
CCS RDC 19 FAULT	Status	**42-21-02-04A**
CCS RDC 2 FAULT	Status	**42-21-02-02**
CCS RDC 2 FWD EE BAY	Status	None
CCS RDC 21 FAULT	Status	**42-21-02-03**
CCS RDC 21 FWD EE UPPER	Status	None
CCS RDC 23 DOOR 4R	Status	None
CCS RDC 23 FAULT	Status	**42-21-02-03**
CCS RDC 3 FAULT	Status	**42-21-02-01**
CCS RDC 3 FWD EE BAY	Status	None
CCS RDC 4 FAULT	Status	**42-21-02-02**
CCS RDC 4 FWD EE BAY	Status	None
CCS RDC 5 DOOR 3L	Status	None
CCS RDC 5 FAULT	Status	**42-21-02-03**
CCS RDC 6 DOOR 3R	Status	None
CCS RDC 6 FAULT	Status	**42-21-02-03**
CCS RDC 7 AFT EE BAY	Status	None
CCS RDC 7 FAULT	Status	**42-21-02-03**
CCS RDC 8 AFT EE BAY	Status	None
CCS RDC 8 FAULT	Status	**42-21-02-03**
CCS RDC 9 AFT EE UPPER	Status	None
CCS RDC 9 FAULT	Status	**42-21-02-03**

Message	Level	MEL Item
CDN REVERSION BYPASS	Status	**23-51-07**
CHECKLIST SYS	Status	**31-61-11**
CHKL INCOMPLETE NORM	Caution	N/A
CHKL NON-NORMAL	Advisory	N/A
COMM	Comm Low	N/A
COMM	Comm Med	N/A
COMM BUSY	Comm Med	N/A
CONDENSER INLET SENSOR L	Status	**21-52-05-02**
CONDENSER INLET SENSOR R	Status	**21-52-05-02**
CONFIG DOORS	Warning	N/A
CONFIG FLAPS	Warning	N/A
CONFIG GEAR	Warning	N/A
CONFIG PARKING BRAKE	Warning	N/A
CONFIG RUDDER	Warning	N/A
CONFIG SPOILERS	Warning	N/A
CONFIG STABILIZER	Warning	N/A
CONFIG WARNING SYS	Advisory	None
CONTROL COLUMN XDCR	Status	**27-31-01**
CONTROL WHEEL XDCR	Status	**27-11-01**
CPCS COMM BUS	Status	**21-31-09**
CPCS CONTROLS	Status	**21-31-01**
CPCS REMOTE SENSOR AFT	Status	**21-31-04**
CPCS REMOTE SENSOR FWD	Status	**21-31-04**
CPCS S/W CONFIG	Status	None
CPRSR ADD HEAT VLV L1	Status	**21-51-05**
CPRSR ADD HEAT VLV L2	Status	**21-51-05**
CPRSR ADD HEAT VLV R1	Status	**21-51-05**
CPRSR ADD HEAT VLV R2	Status	**21-51-05**

Message	Level	MEL Item
CPRSR DEFLECTOR DOOR L	Status	21-51-02
CPRSR DEFLECTOR DOOR R	Status	21-51-02
CPRSR INLET PRESS SNSR L1	Status	21-51-03-01
CPRSR INLET PRESS SNSR L2	Status	21-51-03-01
CPRSR INLET PRESS SNSR R1	Status	21-51-03-02
CPRSR INLET PRESS SNSR R2	Status	21-51-03-02
CPRSR OUTLET PRESS SNSR L1	Status	21-51-06
CPRSR OUTLET PRESS SNSR L2	Status	21-51-06
CPRSR OUTLET PRESS SNSR R1	Status	21-51-06
CPRSR OUTLET PRESS SNSR R2	Status	21-51-06
CPRSR OUTLET TEMP SNSR L1	Status	21-51-07
CPRSR OUTLET TEMP SNSR L2	Status	21-51-07
CPRSR OUTLET TEMP SNSR R1	Status	21-51-07
CPRSR OUTLET TEMP SNSR R2	Status	21-51-07
CPRSR VARIABLE DIFFUSER L1	Status	21-51-04
CPRSR VARIABLE DIFFUSER L2	Status	21-51-04
CPRSR VARIABLE DIFFUSER R1	Status	21-51-04
CPRSR VARIABLE DIFFUSER R2	Status	21-51-04
CREW OXYGEN LOW	Advisory	35-11-01
CROWN TEMP SENSOR	Status	21-25-02
CRUISE FLAPS DISABLED	Status	27-51-02-01
CRUISE FLAPS DISAGREE	Status	27-51-02-02
CRUISE FLAPS FAULT	Status	27-51-02-01
CRUISE FLAPS SYS	Advisory	None
CURSOR CONTROL L	Status	31-61-03
CURSOR CONTROL R	Status	31-61-03

Message	Level	MEL Item
DATA COMM MGMT	Status	23-27-01
DATALINK LOST	Advisory	23-27-01
DATALINK RECORDER SYS AFT	Status	31-31-01-03
DATALINK RECORDER SYS FWD	Status	31-31-01-03
DATALINK SYS	Advisory	23-27-01
DEFUEL ISOLATION VALVE L	Status	28-26-01
DEFUEL ISOLATION VALVE R	Status	28-26-01
DET 1 WHEEL WELL L	Status	26-17-01
DET 1 WHEEL WELL R	Status	26-17-01
DET 1AL CARGO AFT	Status	26-16-01
DET 1AR CARGO AFT	Status	26-16-01
DET 1L CARGO AFT	Status	26-16-01
DET 1L CARGO FWD	Status	26-16-01
DET 1R CARGO AFT	Status	26-16-01
DET 1R CARGO FWD	Status	26-16-01
DET 2 WHEEL WELL L	Status	26-17-01
DET 2 WHEEL WELL R	Status	26-17-01
DET 2AL CARGO AFT	Status	26-16-01
DET 2L CARGO AFT	Status	26-16-01
DET 2L CARGO FWD	Status	26-16-01
DET 2R CARGO AFT	Status	26-16-01
DET 2R CARGO FWD	Status	26-16-01
DET 3 WHEEL WELL L	Status	26-17-01
DET 3 WHEEL WELL R	Status	26-17-01
DET 3AR CARGO AFT	Status	26-16-01
DET 3BR CARGO AFT	Status	26-16-01
DET 3L CARGO AFT	Status	26-16-01
DET 3L CARGO FWD	Status	26-16-01

Message	Level	MEL Item
DET 3R CARGO AFT	Status	26-16-01
DET 3R CARGO FWD	Status	26-16-01
DET 4 WHEEL WELL L	Status	26-17-01
DET 4 WHEEL WELL R	Status	26-17-01
DET 4AL CARGO FWD	Status	26-16-01
DET 4AR CARGO FWD	Status	26-16-01
DET 4BL CARGO FWD	Status	26-16-01
DET 4BR CARGO FWD	Status	26-16-01
DET 4CL CARGO FWD	Status	26-16-01
DET 4CR CARGO FWD	Status	26-16-01
DET 4DL CARGO FWD	Status	26-16-01
DET 4DR CARGO FWD	Status	26-16-01
DET 4L CARGO AFT	Status	26-16-01
DET 4L CARGO FWD	Status	26-16-01
DET 4R CARGO AFT	Status	26-16-01
DET 4R CARGO FWD	Status	26-16-01
DET 5 WHEEL WELL L	Status	26-17-01
DET 5 WHEEL WELL R	Status	26-17-01
DET 5L CARGO FWD	Status	26-16-01
DET 5R CARGO FWD	Status	26-16-01
DET 6 WHEEL WELL L	Status	26-17-01
DET 6 WHEEL WELL R	Status	26-17-01
DET 6L CARGO FWD	Status	26-16-01
DET 6R CARGO FWD	Status	26-16-01
DET 7L CARGO FWD	Status	26-16-01
DET 7R CARGO FWD	Status	26-16-01
DET EAI LEAK L	Status	26-18-01

Message	Level	MEL Item
DET EAI LEAK L CHAN A	Status	26-18-01
		26-18-01-01
DET EAI LEAK L CHAN B	Status	26-18-01
		26-18-01-01
DET EAI LEAK R	Status	26-18-01
DET EAI LEAK R CHAN A	Status	26-18-01
		26-18-01-01
DET EAI LEAK R CHAN B	Status	26-18-01
		26-18-01-01
DET FIRE 1A ENG L	Status	26-11-01-01
DET FIRE 1A ENG R	Status	26-11-01-01
DET FIRE 1B ENG L	Status	26-11-01-01
DET FIRE 1B ENG R	Status	26-11-01-01
DET FIRE 2A ENG L	Status	26-11-01
DET FIRE 2A ENG R	Status	26-11-01
DET FIRE 2B ENG L	Status	26-11-01
DET FIRE 2B ENG R	Status	26-11-01
DET FIRE 3A ENG L	Status	26-11-01
DET FIRE 3A ENG R	Status	26-11-01
DET FIRE 3B ENG L	Status	26-11-01
DET FIRE 3B ENG R	Status	26-11-01
DET FIRE 4A ENG L	Status	26-11-01
DET FIRE 4A ENG R	Status	26-11-01
DET FIRE 4B ENG L	Status	26-11-01
DET FIRE 4B ENG R	Status	26-11-01
DET FIRE 5A ENG L	Status	None
DET FIRE 5A ENG R	Status	None

Message	Level	MEL Item
DET FIRE 5B ENG L	Status	None
DET FIRE 5B ENG R	Status	None
DET FIRE 6A ENG L	Status	**26-11-01**
DET FIRE 6A ENG R	Status	**26-11-01**
DET FIRE 6B ENG L	Status	**26-11-01**
DET FIRE 6B ENG R	Status	**26-11-01**
DET FIRE APU	Advisory	**26-15-01**
DET FIRE CARGO AFT	Advisory	**26-16-01**
DET FIRE CARGO FWD	Advisory	**26-16-01**
DET FIRE ENG L	Advisory	None
DET FIRE ENG R	Advisory	None
DET FIRE LOOP A APU	Status	**26-15-01-01**
DET FIRE LOOP B APU	Status	**26-15-01-01**
DET FIRE WHEEL WELL	Advisory	**26-17-01**
DETECTOR 1 LAV DOOR 1	Status	**26-13-01**
DETECTOR 1 LAV DOOR 2	Status	**26-13-01**
DETECTOR 1 LAV DOOR 3	Status	**26-13-01**
DETECTOR 1 LAV DOOR 4	Status	**26-13-01**
DETECTOR 1 UPR REST DOOR 1	Status	**26-14-02**
DETECTOR 1 UPR REST DOOR 4	Status	**26-14-01**
DETECTOR 2 LAV DOOR 1	Status	**26-13-01**
DETECTOR 2 LAV DOOR 2	Status	**26-13-01**
DETECTOR 2 LAV DOOR 3	Status	**26-13-01**
DETECTOR 2 LAV DOOR 4	Status	**26-13-01**
DETECTOR 2 UPR REST DOOR 1	Status	**26-14-02**
DETECTOR 2 UPR REST DOOR 4	Status	**26-14-01**
DETECTOR 3 LAV DOOR 1	Status	**26-13-01**
DETECTOR 3 LAV DOOR 2	Status	**26-13-01**

Message	Level	MEL Item
DETECTOR 3 LAV DOOR 3	Status	26-13-01
DETECTOR 3 LAV DOOR 4	Status	26-13-01
DETECTOR 3 UPR REST DOOR 1	Status	26-14-02
DETECTOR 3 UPR REST DOOR 4	Status	26-14-01
DETECTOR 4 LAV DOOR 2	Status	26-13-01
DETECTOR 4 LAV DOOR 3	Status	26-13-01
DETECTOR 4 LAV DOOR 4	Status	26-13-01
DETECTOR 4 UPR REST DOOR 1	Status	26-14-02
DETECTOR 4 UPR REST DOOR 4	Status	26-14-01
DETECTOR 5 LAV DOOR 2	Status	26-13-01
DETECTOR 5 LAV DOOR 3	Status	26-13-01
DETECTOR 5 UPR REST DOOR 4	Status	26-14-01
DETECTOR 6 LAV DOOR 2	Status	26-13-01
DETECTOR 6 LAV DOOR 3	Status	26-13-01
DETECTOR 6 UPR REST DOOR 4	Status	26-14-01
DETECTOR 7 UPR REST DOOR 4	Status	26-14-01
DETECTOR 8 UPR REST DOOR 4	Status	26-14-01
DIRECT MODE RATE SNSR	Status	27-02-06
DISPLAY KEYPAD L	Status	31-61-04
DISPLAY KEYPAD R	Status	31-61-04
DISPLAY PANEL INTERFACE	Status	31-61-15
DISPLAY RESOURCES	Status	None
DISPLAY UNIT INTERFACE	Status	31-61-02-02
DISPLAYS AP SEQ DISAGREE	Status	31-61-16
DISPLAYS CONFIG	Status	None
DISPLAYS SOFTWARE CONFIG	Status	None
DME L	Status	34-55-01
DME R	Status	34-55-01

Message	Level	MEL Item
DON'T SINK	Caution	N/A
DOOR AFT CARGO	Caution	**52-71-01**
DOOR AFT CARGO IND	Status	**52-71-01**
DOOR AFT E/E ACCESS	Advisory	**52-71-01**
DOOR AFT E/E ACCESS IND	Status	**52-71-01**
DOOR BULK CARGO	Advisory	**52-71-01**
DOOR BULK CARGO IND	Status	**52-71-01**
DOOR ENTRY 1L	Advisory	**52-71-01**
DOOR ENTRY 1R	Advisory	**52-71-01**
DOOR ENTRY 2L	Advisory	**52-71-01**
DOOR ENTRY 2R	Advisory	**52-71-01**
DOOR ENTRY 3L	Advisory	**52-71-01**
DOOR ENTRY 3R	Advisory	**52-71-01**
DOOR ENTRY 4L	Advisory	**52-71-01**
DOOR ENTRY 4R	Advisory	**52-71-01**
DOOR ENTRY IND 1L	Status	**52-71-01**
DOOR ENTRY IND 1R	Status	**52-71-01**
DOOR ENTRY IND 2L	Status	**52-71-01**
DOOR ENTRY IND 2R	Status	**52-71-01**
DOOR ENTRY IND 3L	Status	**52-71-01**
DOOR ENTRY IND 3R	Status	**52-71-01**
DOOR ENTRY IND 4L	Status	**52-71-01**
DOOR ENTRY IND 4R	Status	**52-71-01**
DOOR EPAS DISARMED SNSR 1L	Status	**52-11-07**
DOOR EPAS DISARMED SNSR 1R	Status	**52-11-07**
DOOR EPAS DISARMED SNSR 2L	Status	**52-11-07**
DOOR EPAS DISARMED SNSR 2R	Status	**52-11-07**

Message	Level	MEL Item
DOOR EPAS DISARMED SNSR 3L	Status	**52-11-07**
DOOR EPAS DISARMED SNSR 3R	Status	**52-11-07**
DOOR EPAS DISARMED SNSR 4L	Status	**52-11-07**
DOOR EPAS DISARMED SNSR 4R	Status	**52-11-07**
DOOR EPAS MODULE 1L	Status	**52-11-01**
DOOR EPAS MODULE 1R	Status	**52-11-01**
DOOR EPAS MODULE 2L	Status	**52-11-01**
DOOR EPAS MODULE 2R	Status	**52-11-01**
DOOR EPAS MODULE 3L	Status	**52-11-01**
DOOR EPAS MODULE 3R	Status	**52-11-01**
DOOR EPAS MODULE 4L	Status	**52-11-01**
DOOR EPAS MODULE 4R	Status	**52-11-01**
DOOR EPAS POWER 1L	Status	**52-11-06**
DOOR EPAS POWER 1R	Status	**52-11-06**
DOOR EPAS POWER 2L	Status	**52-11-06**
DOOR EPAS POWER 2R	Status	**52-11-06**
DOOR EPAS POWER 3L	Status	**52-11-06**
DOOR EPAS POWER 3R	Status	**52-11-06**
DOOR EPAS POWER 4L	Status	**52-11-06**
DOOR EPAS POWER 4R	Status	**52-11-06**
DOOR EPAS SENSORS 1L	Status	**52-11-01**
DOOR EPAS SENSORS 1R	Status	**52-11-01**
DOOR EPAS SENSORS 2L	Status	**52-11-01**
DOOR EPAS SENSORS 2R	Status	**52-11-01**
DOOR EPAS SENSORS 3L	Status	**52-11-01**
DOOR EPAS SENSORS 3R	Status	**52-11-01**
DOOR EPAS SENSORS 4L	Status	**52-11-01**
DOOR EPAS SENSORS 4R	Status	**52-11-01**

Message	Level	MEL Item
DOOR EPAS SQUIB 1L	Status	52-11-01
DOOR EPAS SQUIB 1R	Status	52-11-01
DOOR EPAS SQUIB 2L	Status	52-11-01
DOOR EPAS SQUIB 2R	Status	52-11-01
DOOR EPAS SQUIB 3L	Status	52-11-01
DOOR EPAS SQUIB 3R	Status	52-11-01
DOOR EPAS SQUIB 4L	Status	52-11-01
DOOR EPAS SQUIB 4R	Status	52-11-01
DOOR FD OVHD	Advisory	52-71-01
DOOR FD OVHD IND	Status	52-71-01
DOOR FLT LOCK LOCKED 1L	Status	52-11-01
DOOR FLT LOCK LOCKED 1R	Status	52-11-01
DOOR FLT LOCK LOCKED 2L	Status	52-11-01
DOOR FLT LOCK LOCKED 2R	Status	52-11-01
DOOR FLT LOCK LOCKED 3L	Status	52-11-01
DOOR FLT LOCK LOCKED 3R	Status	52-11-01
DOOR FLT LOCK LOCKED 4L	Status	52-11-01
DOOR FLT LOCK LOCKED 4R	Status	52-11-01
DOOR FLT LOCK UNLOCKED 1L	Status	52-11-05
DOOR FLT LOCK UNLOCKED 1R	Status	52-11-05
DOOR FLT LOCK UNLOCKED 2L	Status	52-11-05
DOOR FLT LOCK UNLOCKED 2R	Status	52-11-05
DOOR FLT LOCK UNLOCKED 3L	Status	52-11-05
DOOR FLT LOCK UNLOCKED 3R	Status	52-11-05
DOOR FLT LOCK UNLOCKED 4L	Status	52-11-05
DOOR FLT LOCK UNLOCKED 4R	Status	52-11-05
DOOR FWD ACCESS	Advisory	52-71-01
DOOR FWD ACCESS IND	Status	52-71-01

Message	Level	MEL Item
DOOR FWD CARGO	Caution	52-71-01
DOOR FWD CARGO IND	Status	52-71-01
DOOR FWD E/E ACCESS	Advisory	52-71-01
DOOR FWD E/E ACCESS IND	Status	52-71-01
DOOR SAFETY SWITCH 1L	Status	52-11-01
DOOR SAFETY SWITCH 1R	Status	52-11-01
DOOR SAFETY SWITCH 2L	Status	52-11-01
DOOR SAFETY SWITCH 2R	Status	52-11-01
DOOR SAFETY SWITCH 3L	Status	52-11-01
DOOR SAFETY SWITCH 3R	Status	52-11-01
DOOR SAFETY SWITCH 4L	Status	52-11-01
DOOR SAFETY SWITCH 4R	Status	52-11-01
DOORS	Advisory	52-71-01
DOORS AUTO	Memo	N/A
DOORS AUTO/MANUAL	Memo	N/A
DOORS MANUAL	Memo	N/A
DUCT SENSOR ZONE A1	Status	21-61-05-01
DUCT SENSOR ZONE A2	Status	21-61-05-02
DUCT SENSOR ZONE B1	Status	21-61-05-01
DUCT SENSOR ZONE B2	Status	21-61-05-02
DUCT SENSOR ZONE C	Status	21-61-05-02
DUCT SENSOR ZONE D	Status	21-61-05-02
DUCT SENSORS FLIGHT DECK L	Status	21-61-02
DUCT SENSORS FLIGHT DECK R	Status	21-61-02

Message	Level	MEL Item
E-BDI APU BATTERY	Status	24-38-01-01
E-BDI MAIN BATTERY	Status	24-38-01-01
EAI MEDC SW CONFIG	Status	None
EAI PRESS SENSOR L 1	Status	30-21-01 30-21-01-06-01 30-21-01-07
EAI PRESS SENSOR L 2	Status	30-21-01 30-21-01-06-02 30-21-01-07
EAI PRESS SENSOR R 1	Status	30-21-01 30-21-01-06-01 30-21-01-07
EAI PRESS SENSOR R 2	Status	30-21-01 30-21-01-06-02 30-21-01-07
EAI PRSOV CONTROLLER L	Status	30-21-01 30-21-01-01 30-21-01-02
EAI PRSOV CONTROLLER R	Status	30-21-01 30-21-01-01 30-21-01-02
EAI PRSOV L	Status	30-21-01 30-21-01-01 30-21-01-02
EAI PRSOV R	Status	30-21-01 30-21-01-01 30-21-01-02

Message	Level	MEL Item
EAI PRV L	Status	**30-21-01**
		30-21-01-03
		30-21-01-04
EAI PRV R	Status	**30-21-01**
		30-21-01-03
		30-21-01-04
ECONOMY COOLING VALVE L	Status	**21-52-08**
ECONOMY COOLING VALVE R	Status	**21-52-08**
EFIS/DSP PANEL L	Advisory	**31-61-05**
EFIS/DSP PANEL L	Status	**31-61-05**
EFIS/DSP PANEL R	Advisory	**31-61-05**
EFIS/DSP PANEL R	Status	**31-61-05**
ELEC 115V AC BUS ISLN L	Status	None
ELEC 115V AC BUS ISLN R	Status	None
ELEC 115V AC BUS L	Status	None
ELEC 115V AC BUS R	Status	None
ELEC 28V DC BUS L	Status	None
ELEC 28V DC BUS R	Status	None
ELEC AC BUS L1	Caution	None
ELEC AC BUS L2	Caution	None
ELEC AC BUS R1	Caution	None
ELEC AC BUS R2	Caution	None
ELEC APU BATTERY	Status	**24-31-01**
ELEC APU BATTERY CHARGER	Status	**24-31-03**
ELEC APU BATTERY OVERHEAT	Status	None
ELEC APU GEN CTRL UNIT L	Status	**24-22-03**
ELEC APU GEN CTRL UNIT R	Status	None
ELEC APU START PWR UNIT	Status	**24-31-02**

Message	Level	MEL Item
ELEC APU STARTER L	Status	**24-22-02-03**
ELEC APU STARTER R	Status	**24-22-02-05**
ELEC ATU L	Status	None
ELEC ATU R	Status	None
ELEC BACKUP BUS	Status	None
ELEC BATTERY OFF	Advisory	N/A
ELEC BRAKE POWER UNIT LI	Status	None
ELEC BRAKE POWER UNIT LO	Status	None
ELEC BRAKE POWER UNIT RI	Status	None
ELEC BRAKE POWER UNIT RO	Status	None
ELEC BUS PWR CTRL UNIT L	Status	None
ELEC BUS PWR CTRL UNIT R	Status	None
ELEC CABIN/UTIL OFF	Advisory	N/A
ELEC DC BUS ISLN	Status	None
ELEC ENGINE STARTER L1	Status	**24-22-01-04**
ELEC ENGINE STARTER L2	Status	**24-22-01-04**
ELEC ENGINE STARTER R1	Status	**24-22-01-04**
ELEC ENGINE STARTER R2	Status	**24-22-01-04**
ELEC FLT INST BUS CAPT	Status	None
ELEC FLT INST BUS F/O	Status	None
ELEC GEN 1 AIR/OIL VALVE L	Status	**24-11-02**
ELEC GEN 1 AIR/OIL VALVE R	Status	**24-11-02**
ELEC GEN 1 OIL VALVE L	Status	**24-11-03**
ELEC GEN 1 OIL VALVE R	Status	**24-11-03**
ELEC GEN 2 AIR/OIL VALVE L	Status	**24-11-02**
ELEC GEN 2 AIR/OIL VALVE R	Status	**24-11-02**
ELEC GEN 2 OIL VALVE L	Status	**24-11-03**
ELEC GEN 2 OIL VALVE R	Status	**24-11-03**

Message	Level	MEL Item
ELEC GEN CTRL UNIT L1	Status	None
ELEC GEN CTRL UNIT L2	Status	None
ELEC GEN CTRL UNIT R1	Status	None
ELEC GEN CTRL UNIT R2	Status	None
ELEC GEN DEBRIS L1	Status	24-21-01
ELEC GEN DEBRIS L2	Status	24-21-01
ELEC GEN DEBRIS R1	Status	24-21-01
ELEC GEN DEBRIS R2	Status	24-21-01
ELEC GEN DEBRIS SENSOR L1	Status	24-21-01
ELEC GEN DEBRIS SENSOR L2	Status	24-21-01
ELEC GEN DEBRIS SENSOR R1	Status	24-21-01
ELEC GEN DEBRIS SENSOR R2	Status	24-21-01
ELEC GEN DRIVE L1	Advisory	24-22-01
ELEC GEN DRIVE L2	Advisory	24-22-01
ELEC GEN DRIVE R1	Advisory	24-22-01
ELEC GEN DRIVE R2	Advisory	24-22-01
ELEC GEN OFF APU L	Advisory	24-22-02-01
		24-22-02-02
ELEC GEN OFF APU R	Advisory	24-22-02-01
		24-22-02-04
ELEC GEN OFF L1	Advisory	24-22-01
ELEC GEN OFF L2	Advisory	24-22-01
ELEC GEN OFF R1	Advisory	24-22-01
ELEC GEN OFF R2	Advisory	24-22-01
ELEC GEN SYS APU L	Status	24-22-02-01
		24-22-02-02
ELEC GEN SYS APU R	Status	24-22-02-01
		24-22-02-04

Message	Level	MEL Item
ELEC GEN SYS L1	Status	**24-22-01-02**
ELEC GEN SYS L2	Status	**24-22-01-02**
ELEC GEN SYS R1	Status	**24-22-01-02**
ELEC GEN SYS R2	Status	**24-22-01-02**
ELEC HOT BATTERY BUS	Status	None
ELEC HVDC SYS L1	Status	None
ELEC HVDC SYS L2	Status	None
ELEC HVDC SYS R1	Status	None
ELEC HVDC SYS R2	Status	None
ELEC IFE/SEATS OFF	Advisory	N/A
ELEC MAIN AC BUS ISLN L	Status	None
ELEC MAIN AC BUS ISLN R	Status	None
ELEC MAIN BATTERY	Status	None
ELEC MAIN BATTERY CHARGER	Status	None
ELEC MAIN BATTERY OVERHEAT	Status	None
ELEC MC CAC L1 / START L1	Status	**24-15-01-01**
ELEC MC CAC L2 / START R1	Status	**24-15-01-01**
ELEC MC CAC R1 / START L2	Status	**24-15-01-01**
ELEC MC CAC R2 / START R2	Status	**24-15-01-01**
ELEC MC HYD C1	Status	**24-15-01-02**
ELEC MC HYD C2	Status	**24-15-01-02**
ELEC MC HYD L	Status	None
ELEC MC HYD R	Status	None
ELEC P100 DISTR CHANNEL	Status	**24-09-01**
ELEC P100 PANEL	Status	None
ELEC P200 DISTR CHANNEL	Status	**24-09-01**
ELEC P200 PANEL	Status	None

Message	Level	MEL Item
ELEC P300 DISTR CHANNEL	Status	24-09-01
ELEC P300 PANEL	Status	None
ELEC P400 DISTR CHANNEL	Status	24-09-01
ELEC P400 PANEL	Status	None
ELEC POWER DIST S/W	Status	None
ELEC RPDU 21	Status	None
ELEC RPDU 21 CHANNEL	Status	24-71-01-01
ELEC RPDU 22	Status	None
ELEC RPDU 22 CHANNEL	Status	24-71-01-01
ELEC RPDU 31	Status	None
ELEC RPDU 31 CHANNEL	Status	24-71-01-01
ELEC RPDU 32	Status	None
ELEC RPDU 32 CHANNEL	Status	24-71-01-01
ELEC RPDU 33	Status	None
ELEC RPDU 33 CHANNEL	Status	24-71-01-01
ELEC RPDU 34	Status	None
ELEC RPDU 34 CHANNEL	Status	24-71-01-01
ELEC RPDU 41	Status	None
ELEC RPDU 41 CHANNEL	Status	24-71-01-01
ELEC RPDU 42	Status	None
ELEC RPDU 42 CHANNEL	Status	24-71-01-01
ELEC RPDU 73	Status	None
ELEC RPDU 73 CHANNEL	Status	24-71-01-01
ELEC RPDU 74	Status	None
ELEC RPDU 74 CHANNEL	Status	24-71-01-01
ELEC RPDU 75	Status	None
ELEC RPDU 75 CHANNEL	Status	24-71-01-01

Message	Level	MEL Item
ELEC RPDU 76	Status	None
ELEC RPDU 76 CHANNEL	Status	**24-71-01-01**
ELEC RPDU 92	Status	None
ELEC RPDU 92 CHANNEL	Status	**24-71-01-01**
ELEC RPDU GATEWAY 71	Status	None
ELEC RPDU GATEWAY 71 CHAN	Status	**24-71-01-02**
ELEC RPDU GATEWAY 72	Status	None
ELEC RPDU GATEWAY 72 CHAN	Status	**24-71-01-02**
ELEC RPDU GATEWAY 81	Status	None
ELEC RPDU GATEWAY 81 CHAN	Status	**24-71-01-02**
ELEC RPDU GATEWAY 82	Status	None
ELEC RPDU GATEWAY 82 CHAN	Status	**24-71-01-02**
ELEC SPOILER SYS	Status	None
ELEC STANDBY SYS	Advisory	None
ELEC SYS CTRL ENABLE	Status	N/A
ELEC TRU C1	Status	None
ELEC TRU C2	Status	None
ELEC TRU L	Status	None
ELEC TRU R	Status	None
ELEVATOR SYS	Status	None
ELT ON	Advisory	N/A
EMER LIGHTS	Advisory	**33-51-01**
ENG AIR/OIL VALVE CLOSED L	Status	None
ENG AIR/OIL VALVE CLOSED R	Status	None
ENG AIR/OIL VALVE OPEN L	Status	**79-21-01**
ENG AIR/OIL VALVE OPEN R	Status	**79-21-01**
ENG AUTOSTART L	Caution	None
ENG AUTOSTART R	Caution	None

Message	Level	MEL Item
ENG BLEED VALVE L	Status	75-33-01
ENG BLEED VALVE R	Status	75-33-01
ENG CCC VALVE L	Status	75-33-01
ENG CCC VALVE R	Status	75-33-01
ENG CONTROL L	Advisory	None
ENG CONTROL L	Status	None
ENG CONTROL R	Advisory	None
ENG CONTROL R	Status	None
ENG CORE ANTI-ICE L (RR)	Advisory	75-11-01
ENG CORE ANTI-ICE R (RR)	Advisory	75-11-01
ENG EEC C1 L	Status	73-21-03
ENG EEC C1 R	Status	73-21-03
ENG EEC MODE L	Advisory	73-21-01
ENG EEC MODE L	Status	73-21-01
ENG EEC MODE R	Advisory	73-21-01
ENG EEC MODE R	Status	73-21-01
ENG EEC OVHT L	Status	None
ENG EEC OVHT R	Status	None
ENG ESS A/I VALVE CLOSED L	Status	75-11-01A
ENG ESS A/I VALVE CLOSED R	Status	75-11-01A
ENG ESS A/I VALVE OPEN L	Status	75-11-01B
ENG ESS A/I VALVE OPEN R	Status	75-11-01B
ENG FAIL L	Caution	None
ENG FAIL R	Caution	None
ENG FUEL FILTER L	Advisory	None
ENG FUEL FILTER L	Status	None
ENG FUEL FILTER L+R	Caution	None

Message	Level	MEL Item
ENG FUEL FILTER R	Advisory	None
ENG FUEL FILTER R	Status	None
ENG FUEL FILTER SENSOR L	Status	**73-34-01**
ENG FUEL FILTER SENSOR R	Status	**73-34-01**
ENG FUEL HX L	Status	None
ENG FUEL HX R	Status	None
ENG FUEL HX SENSOR L	Status	**73-11-02**
ENG FUEL HX SENSOR R	Status	**73-11-02**
ENG FUEL NOZZLE L	Advisory	None
ENG FUEL NOZZLE R	Advisory	None
ENG FUEL PUMP L	Status	None
ENG FUEL PUMP R	Status	None
ENG FUEL SPLIT VALVE L	Status	None
ENG FUEL SPLIT VALVE R	Status	None
ENG FUEL STRAINER L	Status	None
ENG FUEL STRAINER L+R	Status	None
ENG FUEL STRAINER R	Status	None
ENG GEN VIB MONITOR L	Status	N/A
ENG GEN VIB MONITOR R	Status	N/A
ENG HP OIL FILTER L	Status	None
ENG HP OIL FILTER R	Status	None
ENG HP OIL FILTER SENSOR L	Status	**79-35-01**
ENG HP OIL FILTER SENSOR R	Status	**79-35-01**
ENG HP TCC VALVE CLOSED L	Status	**75-24-02-01**
ENG HP TCC VALVE CLOSED R	Status	**75-24-02-01**
ENG HP TCC VALVE OPEN L	Status	**75-24-02-01**
ENG HP TCC VALVE OPEN R	Status	**75-24-02-01**

Message	Level	MEL Item
ENG HP TCC VALVE SENSOR L	Status	**75-24-02-01**
ENG HP TCC VALVE SENSOR R	Status	**75-24-02-01**
ENG ICA SYS L	Advisory	None
ENG ICA SYS R	Advisory	None
ENG IGNITOR L1	Status	**74-00-01**
ENG IGNITOR L2	Status	**74-00-01**
ENG IGNITOR R1	Status	**74-00-01**
ENG IGNITOR R2	Status	**74-00-01**
ENG IP TCC VALVE CLOSED L	Status	**75-24-02-02**
ENG IP TCC VALVE CLOSED R	Status	**75-24-02-02**
ENG IP TCC VALVE OPEN L	Status	**75-24-02-02**
ENG IP TCC VALVE OPEN R	Status	**75-24-02-02**
ENG IP TCC VALVE SENSOR L	Status	**75-24-02-02**
ENG IP TCC VALVE SENSOR R	Status	**75-24-02-02**
ENG LIMIT EXCEED L	Caution	N/A
ENG LIMIT EXCEED R	Caution	N/A
ENG LIMIT PROT L	Caution	N/A
ENG LIMIT PROT R	Caution	N/A
ENG MAS SYS TEST L	Status	**75-24-03-03**
ENG MAS SYS TEST R	Status	**75-24-03-03**
ENG MAS VALVE L	Status	**75-24-03-01**
ENG MAS VALVE R	Status	**75-24-03-01**
ENG MAS VALVE SENSOR L	Status	**75-24-03-02**
ENG MAS VALVE SENSOR R	Status	**75-24-03-02**
ENG OIL DMS L	Status	None
ENG OIL DMS R	Status	None
ENG OIL DMS SENSOR L	Status	**79-22-01**
ENG OIL DMS SENSOR R	Status	**79-22-01**

Message	Level	MEL Item
ENG OIL FILTER L	Advisory	None
ENG OIL FILTER L	Status	None
ENG OIL FILTER R	Advisory	None
ENG OIL FILTER R	Status	None
ENG OIL PRESS L	Caution	N/A
ENG OIL PRESS R	Caution	N/A
ENG OIL PRESS SENSOR L	Status	None
ENG OIL PRESS SENSOR R	Status	None
ENG OIL QTY SENSOR L	Status	**79-31-01**
ENG OIL QTY SENSOR R	Status	**79-31-01**
ENG OIL SYS L	Status	None
ENG OIL SYS R	Status	None
ENG OIL TEMP L	Advisory	N/A
ENG OIL TEMP R	Advisory	N/A
ENG OIL TEMP SENSOR L	Status	None
ENG OIL TEMP SENSOR R	Status	None
ENG OVSPD PROT SYS L	Status	None
ENG OVSPD PROT SYS R	Status	None
ENG REV AIR/GND	Caution	None
ENG REV COMMANDED L	Caution	None
ENG REV COMMANDED R	Caution	None
ENG REV LIMITED L	Advisory	**78-31-01**
		78-34-01B
ENG REV LIMITED R	Advisory	**78-31-01**
		78-34-01B
ENG REVERSER INTERLOCK L	Status	**78-34-01**
ENG REVERSER INTERLOCK R	Status	**78-34-01**

Message	Level	MEL Item
ENG REVERSER L	Advisory	78-31-01
ENG REVERSER L	Status	78-31-01
ENG REVERSER R	Advisory	78-31-01
ENG REVERSER R	Status	78-31-01
ENG REVERSER SNSR L	Status	78-36-01
ENG REVERSER SNSR R	Status	78-36-01
ENG RPM LIMITED L	Advisory	N/A
ENG RPM LIMITED R	Advisory	N/A
ENG SCAV OIL FLTR SNSR L	Status	79-35-01-02
ENG SCAV OIL FLTR SNSR R	Status	79-35-01-02
ENG SCAVENGE OIL FILTER L	Status	None
ENG SCAVENGE OIL FILTER R	Status	None
ENG SEC AIR VLV L	Advisory	None
ENG SEC AIR VLV R	Advisory	None
ENG SHUTDOWN	Caution	N/A
ENG SHUTDOWN L	Caution	N/A
ENG SHUTDOWN R	Caution	N/A
ENG START CUTOUT L	Advisory	80-11-01
ENG START CUTOUT R	Advisory	80-11-01
ENG STARTERS L	Advisory	None
ENG STARTERS R	Advisory	None
ENG SURGE L	Caution	N/A
ENG SURGE R	Caution	N/A
ENG TBV CLOSED L	Status	None
ENG TBV CLOSED R	Status	None
ENG TBV OPEN L	Advisory	None
ENG TBV OPEN L	Status	None

Message	Level	MEL Item
ENG TBV OPEN R	Advisory	None
ENG TBV OPEN R	Status	None
ENG TCA OVHT L	Status	None
ENG TCA OVHT R	Status	None
ENG TCMA L (RR)	Status	**73-21-06**
ENG TCMA R (RR)	Status	**73-21-06**
ENG THRUST HIGH L	Warning	None
ENG THRUST HIGH R	Warning	None
ENG THRUST L	Caution	N/A
ENG THRUST LIMIT L	Advisory	None
ENG THRUST LIMIT R	Advisory	None
ENG THRUST R	Caution	N/A
ENG TURB DAMAGE L	Caution	None
ENG TURB DAMAGE L	Status	None
ENG TURB DAMAGE R	Caution	None
ENG TURB DAMAGE R	Status	None
ENG TURB OVHT SNSR L	Status	**77-22-01**
ENG TURB OVHT SNSR R	Status	**77-22-01**
ENG TURB OVHT SYS L	Status	None
ENG TURB OVHT SYS R	Status	None
ENG TURB OVSPD SYS L	Status	None
ENG TURB OVSPD SYS R	Status	None
ENG VIB MONITOR L	Status	**77-31-01**
ENG VIB MONITOR R	Status	**77-31-01**
EQUIP CLG OVRD AFT	Advisory	None
EQUIP CLG OVRD FWD	Advisory	None
EQUIP CLG SMOKE DET AFT 1	Status	**21-27-27-02**
EQUIP CLG SMOKE DET AFT 2	Status	**21-27-27-01**

Message	**Level**	**MEL Item**
EQUIP CLG SMOKE DET FWD 1	Status	**21-27-07-02**
EQUIP CLG SMOKE DET FWD 2	Status	**21-27-07-01**
EQUIP CLG SMOKE DET MISC	Status	**21-27-32**
EQUIP COOLING AFT	Advisory	None
EQUIP COOLING FWD	Advisory	None
EQUIP COOLING FWD FAN 1	Status	**21-27-06**
EQUIP COOLING FWD FAN 2	Status	**21-27-06**
EQUIP COOLING MISC FAN	Status	**21-27-31**
EQUIP EXHAUST FAN AFT	Status	**21-27-22**
EQUIP FLOW DET AFT 1	Status	**21-27-23**
EQUIP FLOW DET AFT 2	Status	**21-27-23**
EQUIP FLOW DET FLIGHT DECK	Status	**21-27-03**
EQUIP FLOW DET FWD	Status	**21-27-03**
EQUIP OVBD VALVE AFT	Status	**21-27-24**
EQUIP OVBD VENT VLV FWD	Status	**21-27-04**
EQUIP OVBD VLV AFT	Advisory	**21-27-24**
EQUIP OVRD VLV AFT	Advisory	None
EQUIP OVRD VLV FWD	Advisory	None
EQUIP SUPPLY AFT FAN 1	Status	**21-27-26**
EQUIP SUPPLY AFT FAN 2	Status	**21-27-26**
EQUIP VENT FAN FWD	Status	**21-27-02**
EVAC COMMAND	Warning	**25-63-01**
FCM CHANNEL C	Status	**27-02-02**
FCM CHANNEL L	Status	**27-02-02**
FCM CHANNEL R	Status	**27-02-02**
FD DOOR AUTO UNLOCK	Warning	N/A
FD DOOR CALL	Comm Med	N/A
FD DOOR KEYPAD CHAN	Status	**52-51-01**

Message	Level	MEL Item
FD DOOR LOCK FAIL	Advisory	52-51-01
FD DOOR LOCK FAIL	Status	52-51-01
FD DOOR OPEN	Advisory	N/A
FIRE APU	Warning	None
FIRE CARGO AFT	Warning	None
FIRE CARGO FWD	Warning	None
FIRE ENG L	Warning	None
FIRE ENG R	Warning	None
FIRE TEST FAIL	Warning	26-11-01
		26-11-02
		26-15-01
		26-16-01
		26-17-01
FIRE TEST IN PROG	Warning	N/A
FIRE TEST PASS	Warning	N/A
FIRE WHEEL WELL	Warning	None
FLAP ALTERNATE SWITCH	Status	27-51-08
FLAP EMCU POWER	Status	None
FLAP LEVER XDCR	Status	27-51-01
FLAP POSN/SKEW SENSORS	Status	27-58-01
FLAP VCTU POWER	Status	27-51-07
FLAP/SLAT CONTROL	Caution	None
FLAP/SLAT FLOW LIMITER	Status	None
FLAP/SLAT HCM POWER A	Status	27-51-06
FLAP/SLAT HCM POWER B	Status	27-51-06
FLAP/SLAT SHUTOFF VALVE	Status	None
FLAP/SLAT SOLENOID COIL	Status	27-51-05
FLAPERON SYS	Status	None

Message	Level	MEL Item
FLAPS DRIVE	Caution	None
FLAPS GROUND INHIBIT	Status	None
FLAPS INSPECTION	Status	None
FLAPS PRIMARY FAIL	Caution	None
FLAPS SECONDARY FAIL	Status	**27-51-03**
FLIGHT CONTROL MODE	Caution	None
FLIGHT CONTROL SYS	Status	None
FLIGHT CONTROLS	Caution	None
FLIGHT DECK BOOST FAN	Status	**21-22-01**
FLIGHT DECK BOOST ISLN VLV	Status	**21-22-02**
FLIGHT DECK SPEAKER L	Status	**23-51-05**
FLIGHT DECK SPEAKER R	Status	**23-51-05**
FLIGHT DECK ZONE SENSOR	Status	**21-61-03**
FLIGHT RECORDER SYS AFT	Status	**31-31-01-02**
FLIGHT RECORDER SYS FWD	Status	**31-31-01-02**
FLOW VALVE CARGO AFT	Status	**26-23-02**
FLOW VALVE CARGO FWD	Status	**26-23-02**
FLT CONTROLS LOCKED	Advisory	None
FLT CREW REST HEATER	Status	**21-41-01**
FLT CREW REST VALVES	Status	**21-29-01**
FMC	Advisory	None
FMC	Comm Med	N/A
FMC C	Status	**34-61-01**
FMC CHANNEL C	Status	None
FMC CHANNEL L	Status	None
FMC CHANNEL R	Status	None
FMC HOLD AIRSPACE	Advisory	N/A
FMC INTERCEPT HDG	Advisory	N/A

Message	**Level**	**MEL Item**
FMC L	Status	**34-61-01**
FMC MESSAGE	Advisory	N/A
FMC PERF UNAVAIL	Advisory	N/A
FMC R	Status	**34-61-01**
FMC RUNWAY DISAGREE	Caution	N/A
FMC UNABLE RTA	Advisory	N/A
FMC VERIFY POSITION	Advisory	N/A
FUEL AUTO JETTISON	Caution	**28-31-01**
FUEL BALANCE ON	Memo	N/A
FUEL BALANCE SYS	Advisory	**28-22-06**
FUEL CROSSFEED	Advisory	**28-22-03**
FUEL CROSSFEED	Status	**28-22-03**
FUEL CROSSFEED ON	Memo	N/A
FUEL DISAGREE	Advisory	N/A
FUEL FLOW ENG L	Advisory	None
FUEL FLOW ENG R	Advisory	None
FUEL IMBALANCE	Advisory	N/A
FUEL IN CENTER	Advisory	N/A
FUEL JETT NOZZLE L	Advisory	**28-31-03**
FUEL JETT NOZZLE R	Advisory	**28-31-03**
FUEL JETTISON MAIN	Advisory	**28-41-01-01**
FUEL JETTISON SYS	Caution	**28-31-01**
FUEL LOW CENTER	Advisory	N/A
FUEL PRESS ENG L	Caution	None
FUEL PRESS ENG L+R	Advisory	N/A
FUEL PRESS ENG R	Caution	None
FUEL PUMP APU	Status	**28-25-01**

Message	**Level**	**MEL Item**
FUEL PUMP CENTER L	Advisory	**28-22-02**
FUEL PUMP CENTER L	Status	**28-22-02**
FUEL PUMP CENTER R	Advisory	**28-22-02**
FUEL PUMP CENTER R	Status	**28-22-02**
FUEL PUMP CTR L+R	Advisory	**28-22-02**
FUEL PUMP L AFT	Advisory	**28-22-01**
FUEL PUMP L AFT	Status	**28-22-01**
FUEL PUMP L FWD	Advisory	**28-22-01**
FUEL PUMP L FWD	Status	**28-22-01**
FUEL PUMP R AFT	Advisory	**28-22-01**
FUEL PUMP R AFT	Status	**28-22-01**
FUEL PUMP R FWD	Advisory	**28-22-01**
FUEL PUMP R FWD	Status	**28-22-01**
FUEL QTY CENTER CHANNEL A	Status	**28-41-02**
FUEL QTY CENTER CHANNEL B	Status	**28-41-02**
FUEL QTY INDICATION	Status	**28-41-01**
FUEL QTY LEFT CHANNEL A	Status	**28-41-02**
FUEL QTY LEFT CHANNEL B	Status	**28-41-02**
FUEL QTY LOW	Caution	N/A
FUEL QTY RIGHT CHANNEL A	Status	**28-41-02**
FUEL QTY RIGHT CHANNEL B	Status	**28-41-02**
FUEL QTY SENSORS C	Status	**28-41-03**
FUEL QTY SENSORS L	Status	**28-41-03**
FUEL QTY SENSORS R	Status	**28-41-03**
FUEL SCAVENGE VALVE L	Status	**28-22-04-02**
FUEL SCAVENGE VALVE R	Status	**28-22-04-02**
FUEL SPAR RTT VALVE L	Status	None
FUEL SPAR RTT VALVE R	Status	None

Message	Level	MEL Item
FUEL SPAR VALVE L	Status	None
FUEL SPAR VALVE R	Status	None
FUEL TEMP HIGH	Advisory	N/A
FUEL TEMP INDICATION C	Status	**28-43-01-01**
FUEL TEMP INDICATION L	Status	**28-43-01-02**
FUEL TEMP INDICATION R	Status	**28-43-01-02**
FUEL TEMP LOW	Status	N/A
FUEL UNUSABLE CTR	Advisory	None
FUEL VALVE APU	Advisory	**28-25-02**
FUEL VALVE APU	Status	**28-25-02**

Message	Level	MEL Item
G/S ALERT INHIBITED	Memo	N/A
GEAR CONTROL	Advisory	**32-30-01**
GEAR CONTROL SYS	Status	**32-30-01**
GEAR DISAGREE	Caution	**32-30-01**
GEAR DOOR	Advisory	**32-30-01**
GEAR DRAG BRACE L	Caution	**32-30-01**
GEAR DRAG BRACE R	Caution	**32-30-01**
GEAR INDICATION SYS	Status	**32-61-01**
GEAR INHIBIT RESET RELAY	Status	**32-31-02-01**
GEAR LEVER SWITCH	Status	**32-31-05**
GEAR SIDE BRACE L	Caution	**32-30-01**
GEAR SIDE BRACE R	Caution	**32-30-01**
GLIDESLOPE	Caution	N/A
GLS L	Status	**34-31-02**
GLS R	Status	**34-31-02**
GND PROX SYS	Advisory	**34-42-05**

Message	**Level**	**MEL Item**
GPS	Advisory	**34-31-05B**
GPS L	Status	**34-31-05**
GPS R	Status	**34-31-05**
GPWS FLAP OVRD	Advisory	N/A
GPWS GEAR OVRD	Advisory	N/A
GPWS TERR OVRD	Advisory	N/A
GROUND CALL	Comm Med	N/A
GROUND PROXIMITY SYS L	Status	**34-42-05**
GROUND PROXIMITY SYS R	Status	**34-42-05**

Message	**Level**	**MEL Item**
HEAT AOA L	Status	**30-32-01**
HEAT AOA R	Status	**30-32-01**
HEAT PITOT C	Advisory	**30-31-01-03**
HEAT PITOT C	Status	**30-31-01-03**
HEAT PITOT L	Advisory	**30-31-01-02**
HEAT PITOT L	Status	**30-31-01-02**
HEAT PITOT L+C+R	Advisory	None
HEAT PITOT R	Advisory	**30-31-01-01**
HEAT PITOT R	Status	**30-31-01-01**
HEAT TAT	Status	**30-33-01**
HF DATALINK	Advisory	**23-11-01-01**
HF DATALINK OFF	Memo	N/A
HF GND OVRD XMIT	Memo	N/A
HIGH CABIN ALT MODE	Memo	N/A
HUD SNGL OPERATION	Advisory	**31-61-02**
HUD SYS CAPT	Advisory	**31-61-14**
HUD SYS CAPT	Status	**31-61-14**

Message	Level	MEL Item
HUD SYS F/O	Advisory	31-61-14
HUD SYS F/O	Status	31-61-14
HUD TAKEOFF	Caution	31-61-14-01
HUD TAKEOFF	Status	31-61-14-01
HYD FILTER CASE C1	Status	29-11-07
HYD FILTER CASE C2	Status	29-11-07
HYD FILTER CASE DEM L	Status	29-11-07
HYD FILTER CASE DEM R	Status	29-11-07
HYD FILTER CASE PRI L	Status	29-11-07
HYD FILTER CASE PRI R	Status	29-11-07
HYD INTERNAL LEAKAGE C	Status	None
HYD INTERNAL LEAKAGE L	Status	None
HYD INTERNAL LEAKAGE R	Status	None
HYD OVERHEAT C1	Advisory	29-11-02
HYD OVERHEAT C2	Advisory	29-11-02
HYD OVERHEAT DEM L	Advisory	None
HYD OVERHEAT DEM R	Advisory	None
HYD OVERHEAT PRI L	Advisory	None
HYD OVERHEAT PRI R	Advisory	None
HYD PRESS C1	Advisory	29-11-02
HYD PRESS C2	Advisory	29-11-02
HYD PRESS DEM L	Advisory	None
HYD PRESS DEM R	Advisory	None
HYD PRESS IND C1	Status	29-31-02
HYD PRESS IND C2	Status	29-31-02
HYD PRESS IND DEM L	Status	29-31-02
HYD PRESS IND DEM R	Status	29-31-02
HYD PRESS IND PRI L	Status	29-31-02

Message	Level	MEL Item
HYD PRESS IND PRI R	Status	29-31-02
HYD PRESS PRI L	Advisory	None
HYD PRESS PRI R	Advisory	None
HYD PRESS RESERVOIR C	Status	None
HYD PRESS RESERVOIR L	Status	None
HYD PRESS RESERVOIR R	Status	None
HYD PRESS SYS C	Caution	None
HYD PRESS SYS L	Caution	None
HYD PRESS SYS L+C	Caution	None
HYD PRESS SYS L+C+R	Caution	None
HYD PRESS SYS L+R	Caution	None
HYD PRESS SYS R	Caution	None
HYD PRESS SYS R+C	Caution	None
HYD PUMP C1	Status	29-11-02
		29-11-03-01
HYD PUMP C2	Status	29-11-02
		29-11-03-01
HYD PUMP DEM L	Status	29-11-03-02
HYD PUMP DEM R	Status	29-11-03-03
HYD PUMP DEPRESS PRI L	Status	29-11-01
HYD PUMP DEPRESS PRI R	Status	29-11-01
HYD PUMP PRI L	Status	29-31-02
HYD PUMP PRI R	Status	29-31-02
HYD QTY IND C	Status	29-33-01
HYD QTY IND L	Status	29-33-01
HYD QTY IND R	Status	29-33-01
HYD QTY LOW C	Advisory	None
HYD QTY LOW L	Advisory	None

Message	Level	MEL Item
HYD QTY LOW R	Advisory	None
HYD RSVR PRESS IND C	Status	29-18-02
HYD RSVR PRESS IND L	Status	29-18-02
HYD RSVR PRESS IND R	Status	29-18-02
HYD SPOILER SYS	Status	None
HYD SYS PRESS SNSR C	Status	29-31-01-02
HYD SYS PRESS SNSR L	Status	29-31-01-01
HYD SYS PRESS SNSR R	Status	29-31-01-01
HYD TEMP IND C1	Status	29-32-01
HYD TEMP IND C2	Status	29-32-01
HYD TEMP IND DEM L	Status	29-32-01
HYD TEMP IND DEM R	Status	29-32-01
HYD TEMP IND PRI L	Status	29-32-01
HYD TEMP IND PRI R	Status	29-32-01
HYD TEMP IND RSVR C	Status	29-18-04
HYD TEMP IND RSVR L	Status	29-18-04
HYD TEMP IND RSVR R	Status	29-18-04
HYD VLV AUTO BLEED RSVR C	Status	29-31-03
HYD VLV AUTO BLEED RSVR L	Status	29-31-03
HYD VLV AUTO BLEED RSVR R	Status	29-31-03
HYD VLV GEAR ALT EXTEND	Status	29-11-06
HYD VLV HT EXCHR BYPASS C	Status	None
HYD VLV HT EXCHR BYPASS L	Status	None
HYD VLV HT EXCHR BYPASS R	Status	None
HYD VLV ISLN NOSE GEAR	Status	29-11-05
HYD VLV ISLN RSV STEERING	Status	29-11-04
HYD VLV SUPPLY PRI PUMP L	Status	None
HYD VLV SUPPLY PRI PUMP R	Status	None

Message	Level	MEL Item
ICE DETECTOR L	Status	**30-81-01**
ICE DETECTOR R	Status	**30-81-01**
ICE DETECTORS	Advisory	**30-81-01**
ICING ENG	Caution	N/A
ILS L	Status	**34-31-01**
ILS R	Status	**34-31-01**
INSUFFICIENT FUEL	Advisory	N/A
INTEG CLG GLY BYPASS VLV	Status	**21-53-04**
INTEG CLG LOWER RECIRC VLV	Status	**21-53-03-02**
INTEG CLG UPPER RECIRC VLV	Status	**21-53-03-01**
INTEGRATED CLG RECIRC AIR	Status	**21-53-01**
INTEGRATED CLG SYSTEM	Status	**21-53-02**
INTEGRATED COOLING LEAK	Status	**21-53-01-02**
IRU ALIGN MODE L	Memo	N/A
IRU ALIGN MODE L+R	Memo	N/A
IRU ALIGN MODE R	Memo	N/A
IRU ATT MODE L	Advisory	**34-21-01-01**
IRU ATT MODE R	Advisory	**34-21-01-01**
IRU L	Status	**34-21-01-01**
IRU R	Status	**34-21-01-01**
IRU/AHRU MOTION	Advisory	N/A

Message	Level	MEL Item
JETTISON ISOLATION VALVE L	Status	**28-31-02**
JETTISON ISOLATION VALVE R	Status	**28-31-02**
JETTISON NOZZLE VALVE L	Status	**28-31-03**
JETTISON NOZZLE VALVE R	Status	**28-31-03**

Message	**Level**	**MEL Item**
LANDING ALTITUDE	Advisory	N/A
LAVATORY/GALLEY AIR FLOW	Status	**21-26-03**
LAVATORY/GALLEY FAN 1	Status	**21-26-01**
LAVATORY/GALLEY FAN 2	Status	**21-26-01**
LAVATORY/GALLEY FLOW DET	Status	**21-26-02**
LIQUID CLG PRESS SNSR L	Status	**21-81-04**
LIQUID CLG PRESS SNSR R	Status	**21-81-04**
LIQUID CLG QTY L	Advisory	None
LIQUID CLG QTY R	Advisory	None
LIQUID CLG TEMP CTRL VLV L	Status	**21-81-06**
LIQUID CLG TEMP CTRL VLV R	Status	**21-81-06**
LIQUID COOLING FILTER L	Status	**21-81-07**
LIQUID COOLING FILTER R	Status	**21-81-07**
LIQUID COOLING ISLN VLV L	Status	**21-81-03**
LIQUID COOLING ISLN VLV R	Status	**21-81-03**
LIQUID COOLING L	Caution	None
LIQUID COOLING L PUMP 1	Status	**21-81-05**
LIQUID COOLING L PUMP 2	Status	**21-81-05**
LIQUID COOLING LEAK L	Status	**21-81-01**
LIQUID COOLING LEAK R	Status	**21-81-01**
LIQUID COOLING QTY SNSR L	Status	**21-81-02**
LIQUID COOLING QTY SNSR R	Status	**21-81-02**
LIQUID COOLING R	Caution	None
LIQUID COOLING R PUMP 1	Status	**21-81-05**
LIQUID COOLING R PUMP 2	Status	**21-81-05**
LIQUID COOLING TEMP SNSR L	Status	**21-81-06**
LIQUID COOLING TEMP SNSR R	Status	**21-81-06**
LNAV BANK ANGLE LIM	Advisory	N/A

Message	**Level**	**MEL Item**
LOW LIMIT VALVE L	Status	**21-52-05-01**
LOW LIMIT VALVE R	Status	**21-52-05-01**

Message	**Level**	**MEL Item**
MAIN BATTERY	Advisory	None
MAIN BATTERY DISCH	Advisory	None
MAIN BATTERY LOW	Advisory	None
MAINT KBB PWR TEST	Status	None
MAINTENANCE ENABLE	Status	N/A
MASTER CAUTION IND L	Status	**31-51-02**
MASTER CAUTION IND R	Status	**31-51-02**
MASTER WARNING IND L	Status	**31-51-01**
MASTER WARNING IND R	Status	**31-51-01**
MEDC CHAN A ENG L	Status	**26-11-02-01**
MEDC CHAN A ENG R	Status	**26-11-02-01**
MEDC CHAN B ENG L	Status	**26-11-02-02**
MEDC CHAN B ENG R	Status	**26-11-02-02**
MIC PTT SW CAPT ACP	Status	**23-51-04-02**
MIC PTT SW CAPT CTRL WHEEL	Status	**23-51-04-01**
MIC PTT SW CAPT GLARE SHLD	Status	**23-51-04-03**
MIC PTT SW CAPT HANDMIC	Status	**23-51-02**
MIC PTT SW F/O ACP	Status	**23-51-04-02**
MIC PTT SW F/O CTRL WHEEL	Status	**23-51-04-01**
MIC PTT SW F/O GLARE SHLD	Status	**23-51-04-03**
MIC PTT SW F/O HANDMIC	Status	**23-51-02**
MIC PTT SW OBS ACP	Status	**25-11-02-01**
MIC PTT SW OBS HANDMIC	Status	**25-11-02-01**

Message	Level	MEL Item
MLG BYPASS INHIBIT RELAY	Status	32-31-02-02
MLG BYPASS SOL	Status	32-31-03-01
MLG CTRL INHIBIT RELAY	Status	32-31-02-02
MLG DOOR CLOSE SNSR L	Status	32-61-02
MLG DOOR CLOSE SNSR R	Status	32-61-02
MLG DOOR CLOSE SOL	Status	32-31-03-01
MLG DOOR HANDLE L	Status	32-31-06
MLG DOOR HANDLE R	Status	32-31-06
MLG DOOR NORM CLOSE SOL L	Status	32-31-03-01
MLG DOOR NORM CLOSE SOL R	Status	32-31-03-01
MLG DOOR OPEN SNSR L	Status	32-31-04-01
MLG DOOR OPEN SNSR R	Status	32-31-04-01
MLG DOOR OPEN SOL	Status	32-31-03-01
MLG DOWN SNSR L	Status	32-31-04-01
MLG DOWN SNSR R	Status	32-31-04-01
MLG DOWN SOL	Status	32-31-03-01
MLG DR CLOSE INHIBIT RELAY	Status	32-31-02-02
MLG PRESSURE	Status	32-31-07-02
		32-31-07-02-01
MLG TILT SOL L	Status	32-31-03-01
MLG TILT SOL R	Status	32-31-03-01
MLG TRUCK STOW SNSR L	Status	32-31-04-01
MLG TRUCK STOW SNSR R	Status	32-31-04-01
MLG UP SNSR L	Status	32-31-04-01
MLG UP SNSR R	Status	32-31-04-01
MLG UP SOL	Status	32-31-03-01
MLG UPLOCK SNSR L	Status	32-61-03
MLG UPLOCK SNSR R	Status	32-61-03

Message	Level	MEL Item
MODAL ACCELEROMETER	Status	**27-02-07**
MODAL ACCELEROMETER FWD	Status	**27-02-07-02**
MONITOR RADAR DISP	Caution	N/A

Message	Level	MEL Item
NAV AIR DATA SYS	Caution	None
NAV AIRSPEED DATA	Advisory	None
NAV APPROACH GLS	Advisory	**34-31-02**
NAV APPROACH ILS	Advisory	**34-31-01**
NAV INERTIAL SYS	Caution	None
NAV IRU	Advisory	None
NAV SINGLE GPS	Advisory	**34-31-05A**
NAV UNABLE RNP	Caution	N/A
NITROGEN GEN GND CLG VLV	Status	**47-11-01-02**
NITROGEN GEN SOV	Status	**47-11-01-03**
NITROGEN GENERATION SYS	Status	**47-11-01-01**
NLG BYPASS INHIBIT RELAY	Status	**32-31-02-03**
NLG BYPASS SOL	Status	**32-31-03-02**
NLG CTRL INHIBIT RELAY	Status	**32-31-02-03**
NLG DOOR CLOSE SNSR	Status	**32-61-02**
NLG DOOR CLOSE SOL	Status	**32-31-03-02**
NLG DOOR HANDLE	Status	**32-31-06**
NLG DOOR NORM CLOSE SOL	Status	**32-31-03-02**
NLG DOOR OPEN SNSR	Status	**32-31-04-02**
NLG DOOR OPEN SOL	Status	**32-31-03-02**
NLG DOWN SNSR	Status	**32-31-04-02**
NLG DOWN SOL	Status	**32-31-03-02**
NLG DR CLOSE INHIBIT RELAY	Status	**32-31-02-03**

Message	**Level**	**MEL Item**
NLG PRESSURE	Status	**32-31-07-01**
		32-31-07-02
NLG UP SNSR	Status	**32-31-04-02**
NLG UP SOL	Status	**32-31-03-02**
NO AUTOLAND	Caution	**22-11-07**
NO AUTOLAND	Advisory	**22-11-07**
NO AUTOLAND	Status	**22-11-07**
NO AUTOLAND GLS	Advisory	**34-31-02**
NO AUTOLAND ILS	Advisory	**34-31-01**
NO LAND 3	Caution	**22-11-07-01**
NO LAND 3	Advisory	**22-11-07-01**
NO LAND 3	Status	**22-11-07-01**
NOSE GEAR PRESS XDCR	Status	**31-51-04**
NOSE WHEEL STEERING	Advisory	None
NOSE WHEEL STEERING	Status	None
NOSE WHEEL STEERING CHAN	Status	**32-51-01-01**

Message	**Level**	**MEL Item**
OBSTACLE AHEAD	Caution	N/A
OUTFLOW VALVE AFT	Advisory	**21-31-03**
OUTFLOW VALVE AFT CHAN L	Status	**21-31-01**
OUTFLOW VALVE AFT CHAN R	Status	**21-31-01**
OUTFLOW VALVE FWD	Advisory	**21-31-03**
OUTFLOW VALVE FWD CHAN L	Status	**21-31-01**
OUTFLOW VALVE FWD CHAN R	Status	**21-31-01**
OVERHEAT ENG L	Caution	None
OVERHEAT ENG R	Caution	None
OVERHEAT WHEEL WELL	Caution	None

Message	**Level**	**MEL Item**
OVERSPEED	Warning	N/A
OVERSPEED SYS	Status	None
OVERSPEED VFE	Status	None
OVERSPEED VMO/MMO	Status	None
OVRD VALVE AFT MOTOR 1	Status	**21-27-25**
OVRD VALVE AFT MOTOR 2	Status	**21-27-25**
OVRD VALVE FWD MOTOR 1	Status	**21-27-05**
OVRD VALVE FWD MOTOR 2	Status	**21-27-05**

Message	**Level**	**MEL Item**
P5 AIR COND CHAN A	Status	**23-93-01**
P5 AIR COND CHAN B	Status	**23-93-01**
P5 ANTI-ICE CHAN A	Status	**23-93-01**
P5 ANTI-ICE CHAN B	Status	**23-93-01**
P5 CARGO FIRE / ENG CHAN A	Status	**23-93-01**
P5 CARGO FIRE / ENG CHAN B	Status	**23-93-01**
P5 CARGO HEAT CHAN A	Status	**23-93-01**
P5 CARGO HEAT CHAN B	Status	**23-93-01**
P5 ELEC CHAN A	Status	**23-93-01**
P5 ELEC CHAN B	Status	**23-93-01**
P5 FUEL CHAN A	Status	**23-93-01**
P5 FUEL CHAN B	Status	**23-93-01**
P5 HYD CHAN A	Status	**23-93-01**
P5 HYD CHAN B	Status	**23-93-01**
P5 PASS CHAN A	Status	**23-93-01**
P5 PASS CHAN B	Status	**23-93-01**
P5 PFC / IRS CHAN A	Status	**23-93-01**
P5 PFC / IRS CHAN B	Status	**23-93-01**

Message	Level	MEL Item
P5 PRESS CHAN A	Status	23-93-01
P5 PRESS CHAN B	Status	23-93-01
P5 WINDOW HEAT CHAN A	Status	23-93-01
P5 WINDOW HEAT CHAN B	Status	23-93-01
PACK ACM L	Status	21-52-03
PACK ACM R	Status	21-52-03
PACK ALTITUDE LIMIT	Caution	N/A
PACK BAY ODS CTRL A	Status	21-52-13-01
PACK BAY ODS CTRL B	Status	21-52-13-01
PACK BAY ODS LOOP L1	Status	21-52-13-02
PACK BAY ODS LOOP L2	Status	21-52-13-02
PACK BAY ODS LOOP R1	Status	21-52-13-02
PACK BAY ODS LOOP R2	Status	21-52-13-02
PACK CTRL UNIT S/W CONFIG	Status	None
PACK FLOW SNSR L	Status	21-51-08
PACK FLOW SNSR R	Status	21-51-08
PACK L	Advisory	21-52-01
PACK L	Status	21-52-01
PACK L+R	Caution	None
PACK MODEL L	Advisory	21-52-03
		21-52-04
		21-52-05
		21-52-08
		21-52-12
PACK MODEL R	Advisory	21-52-03
		21-52-04
		21-52-05
		21-52-08
		21-52-12

Message	**Level**	**MEL Item**
PACK OUTLET TEMP SENSORS L	Status	**21-52-07**
PACK OUTLET TEMP SENSORS R	Status	**21-52-07**
PACK R	Advisory	**21-52-01**
PACK R	Status	**21-52-01**
PARKING BRAKE SET	Memo	N/A
PASS OXYGEN ON	Advisory	N/A
PASS OXYGEN POWER	Status	**35-21-01**
PASS OXYGEN POWER CHANNEL	Status	**35-21-01-01**
PASS OXYGEN SYS	Status	**35-21-01**
PASSENGER ADDRESS	Status	**44-12-01**
PEDAL STEERING CHAN	Status	**32-51-01-02**
PEDAL STEERING DISC L	Status	**32-51-03**
PEDAL STEERING DISC R	Status	**32-51-03**
PFCS INTERFACE	Status	**27-02-03**
PFD UNRELIABLE CAPT	Advisory	None
PFD UNRELIABLE F/O	Advisory	None
PILOT CONTROL SYS	Status	None
PILOT RESPONSE	Warning	N/A
PILOT RESPONSE	Caution	N/A
PILOT RESPONSE	Advisory	N/A
PITCH DOWN AUTHORITY	Caution	None
PITCH UP AUTHORITY	Caution	None
PITOT ADM C	Status	**34-12-01-03**
PITOT ADM L	Status	**34-12-01-02**
PITOT ADM R	Status	**34-12-01-01**
PRI FLIGHT COMPUTERS	Caution	None
PRINTER	Comm Low	N/A
PRINTER	Comm Med	N/A

Message	Level	MEL Item
PSDC 1	Status	32-08-01-01
PSDC 1 DATABUS	Status	32-08-01-04
PSDC 1 FAULT	Status	32-08-01-01
PSDC 2	Status	None
PSDC 2 DATABUS	Status	32-08-01-05
PSDC 2 FAULT	Status	None
PSDC 2 POWER	Status	32-08-01-03
PSDC 3	Status	None
PSDC 3 DATABUS	Status	32-08-01-05
PSDC 3 FAULT	Status	None
PSDC 3 POWER	Status	32-08-01-03
PSDC 4	Status	None
PSDC 4 DATABUS	Status	32-08-01-05
PSDC 4 FAULT	Status	None
PSDC 4 POWER	Status	32-08-01-03
PSDC 5	Status	None
PSDC 5 DATABUS	Status	32-08-01-05
PSDC 5 FAULT	Status	None
PSDC 5 POWER	Status	32-08-01-03
PSDC 6	Status	32-08-01-02
PSDC 6 DATABUS	Status	32-08-01-04
PSDC 6 FAULT	Status	32-08-01-02

Message	Level	MEL Item
RADIO ALTIMETER L	Status	34-33-01
RADIO ALTIMETER L+R	Advisory	None
RADIO ALTIMETER R	Status	34-33-01
RADIO TRANSMIT CAPT	Advisory	N/A

Message	Level	MEL Item
RADIO TRANSMIT F/O	Advisory	N/A
RADIO TRANSMIT OBS	Advisory	N/A
RAM AIR EXIT DOOR L	Status	**21-52-11**
RAM AIR EXIT DOOR R	Status	**21-52-11**
RAM AIR INLET DOOR L	Status	**21-52-10**
RAM AIR INLET DOOR R	Status	**21-52-10**
RAM FAN BACKUP L	Status	**21-52-12-06**
RAM FAN BACKUP LEFT A	Status	**21-52-12-06**
RAM FAN BACKUP LEFT B	Status	**21-52-12-06**
RAM FAN BACKUP R	Status	**21-52-12-06**
RAM FAN CONTROL L	Status	**21-52-12-03**
RAM FAN CONTROL R	Status	**21-52-12-04**
RAM FAN DUAL CONTROL	Status	**21-52-12-05**
RAM FAN L	Status	**21-52-12-01**
RAM FAN PRIMARY L	Status	**21-52-12-05**
RAM FAN PRIMARY R	Status	**21-52-12-05**
RAM FAN R	Status	**21-52-12-02**
RAT DEPLOY INOP	Status	None
RAT GEN HEAT	Status	**29-21-03**
RAT UNLOCKED	Advisory	**29-21-02**
RECIRC FAN LWR L	Status	**21-25-01-01-02** **21-25-01-02-02**
RECIRC FAN LWR OFF	Advisory	N/A
RECIRC FAN LWR R	Status	**21-25-01-01-02** **21-25-01-02-02**
RECIRC FAN UPR	Status	**21-25-01-01-01** **21-25-01-02-01**
RECIRC FAN UPR OFF	Advisory	N/A
RECORDER INDEP PWR SPLY	Status	**31-31-01-04**

Message	Level	MEL Item
REFUEL VALVE CENTER L	Status	**28-21-01-02**
REFUEL VALVE CENTER R	Status	**28-21-01-02**
REFUEL VALVE L INBOARD	Status	**28-21-01-01**
REFUEL VALVE L OUTBOARD	Status	**28-21-01-01**
REFUEL VALVE R INBOARD	Status	**28-21-01-01**
REFUEL VALVE R OUTBOARD	Status	**28-21-01-01**
REMOTE LIGHT SENSOR	Status	**31-61-10**
ROLL LEFT AUTHORITY	Caution	None
ROLL RIGHT AUTHORITY	Caution	None
ROLL/YAW ASYMMETRY	Caution	None
RUDDER PEDAL XDCR	Status	**27-21-02**
RUDDER SYS	Status	None
RWY/APP CRS ERROR	Advisory	N/A
RWY/APP TUNE ERROR	Advisory	N/A

Message	Level	MEL Item
SATCOM	Advisory	**23-15-01**
SATCOM ANTENNA SYS	Status	**23-15-01**
SATCOM CALL	Comm Med	N/A
SATCOM DATALINK	Advisory	**23-15-01-01**
SATCOM DATALINK OFF	Memo	N/A
SATCOM SYS	Status	**23-15-01**
SATVOICE LOST	Advisory	N/A
SEATBELTS ON	Memo	N/A
SEC HX SENSOR L	Status	**21-52-06**
SEC HX SENSOR R	Status	**21-52-06**
SELCAL	Comm Med	N/A

Message	Level	MEL Item
SGL SOURCE APPROACH	Caution	34-31-01
		34-31-02
SGL SOURCE ATTITUDE	Advisory	None
SGL SOURCE RAD ALT	Advisory	34-33-01
SINGLE FMC	Advisory	None
SINGLE SOURCE F/D	Advisory	22-11-03
SINK RATE	Caution	N/A
SLAT EMCU POWER	Status	None
SLAT POSN SENSORS	Status	27-88-01
SLAT SKEW MONITOR	Status	None
SLATS DRIVE	Caution	None
SLATS GROUND INHIBIT	Status	None
SLATS PRIMARY FAIL	Caution	None
SLATS SECONDARY FAIL	Status	27-81-01
SMOKE EQUIP CLG AFT	Caution	None
SMOKE EQUIP CLG FWD	Caution	None
SMOKE EQUIP CLG MISC	Caution	None
SMOKE LAVATORY	Advisory	None
SMOKE REST UPR DR 1	Caution	None
SMOKE REST UPR DR 4	Caution	None
SPEEDBRAKE ARMED	Memo	N/A
SPEEDBRAKE EXTENDED	Caution	N/A
SPEEDBRAKE LEVER XDCR	Status	27-61-01
SPOILER ACTUATOR	Status	27-61-02
SPOILER DRAG	Advisory	None
SPOILER PAIRS	Advisory	None
SPOILERS	Advisory	27-61-02
STAB CHANNEL	Status	27-41-03

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Message	**Level**	**MEL Item**
STAB GREENBAND	Advisory	**31-51-04**
STAB LOAD XDCR	Status	**27-48-02**
STAB POSITION XDCR	Status	**27-48-01**
STABILIZER	Warning	None
STABILIZER CUTOUT	Advisory	None
STABILIZER L2	Advisory	**27-41-03**
STABILIZER R2	Advisory	**27-41-03**
STABILIZER SYS	Status	None
STALL PROTECTION	Advisory	None
STALL WARNING SYS	Status	None
STATIC ADM C	Status	None
STATIC ADM L	Status	**34-12-02-02**
STATIC ADM R	Status	**34-12-02-01**
STEERING LOCKED OUT	Memo	N/A
STICK SHAKER L	Status	**27-32-01**
STICK SHAKER R	Status	**27-32-01**

Message	**Level**	**MEL Item**
STABILIZER L2	Advisory	**27-41-03**
STABILIZER R2	Advisory	**27-41-03**
STABILIZER SYS	Status	None
STALL PROTECTION	Advisory	None
STALL WARNING SYS	Status	None
STATIC ADM C	Status	None
STATIC ADM L	Status	**34-12-02-02**
STATIC ADM R	Status	**34-12-02-01**
STEERING LOCKED OUT	Memo	N/A
STICK SHAKER L	Status	**27-32-01**
STICK SHAKER R	Status	**27-32-01**

Message	**Level**	**MEL Item**
T/O THRUST DISAGREE	Advisory	**22-31-04**
TAIL AIRFLOW SYS	Status	**27-24-01**
TAIL STRIKE	Caution	**32-71-01-02**
TAIL STRIKE CHANNEL 1	Status	**32-71-01**
TAIL STRIKE CHANNEL 2	Status	**32-71-01**
TAT	Status	None
TCAS	Advisory	**34-42-02**
TCAS L	Status	**34-42-02**
TCAS OFF	Advisory	N/A
TCAS R	Status	**34-42-02**
TCAS RA CAPTAIN	Advisory	None
TCAS RA F/O	Advisory	None
TCP ALTN NAV	Advisory	N/A
TCP C	Status	**23-24-01**
TCP L	Status	None
TCP L BACKUP NAV	Status	**23-24-01-01**
TCP R	Status	**23-24-01**
TCP S/W CONFIG	Status	**23-24-01**
TERR POS	Advisory	**34-42-05-03**
TERR SYS L	Status	**34-42-05-03**
TERR SYS R	Status	**34-42-05-03**
TERRAIN	Caution	N/A
TERRAIN AHEAD	Caution	N/A
TEST EQUIPMENT CONNECTED	Status	N/A
THRUST ASYM PROT	Advisory	None
THRUST ASYM PROT L	Status	None
THRUST ASYM PROT R	Status	None

Message	Level	MEL Item
TILLER L	Caution	32-51-02-01
TILLER L CHAN	Status	32-51-02-03
TILLER R	Caution	32-51-02-02
TILLER R CHAN	Status	32-51-02-03
TIRE PRESS	Advisory	None
TIRE PRESS SYS	Status	32-49-01
TOO LOW FLAPS	Caution	N/A
TOO LOW GEAR	Caution	N/A
TOO LOW TERRAIN	Caution	N/A
TRANSPONDER	Advisory	34-42-03
TRANSPONDER L	Status	34-42-03
TRANSPONDER PANEL	Advisory	34-42-04
TRANSPONDER PANEL	Status	34-42-04
TRANSPONDER R	Status	34-42-03
TRIM AIR L	Advisory	21-62-01
TRIM AIR PRSOV L	Status	21-62-01
TRIM AIR PRSOV R	Status	21-62-01
TRIM AIR R	Advisory	21-62-01
TRIM PRESS SENSOR L	Status	21-62-02
TRIM PRESS SENSOR R	Status	21-62-02
TRIM VALVE FLIGHT DECK L	Status	21-61-01
TRIM VALVE FLIGHT DECK R	Status	21-61-01
TRIM VALVE ZONE A	Status	21-61-04
TRIM VALVE ZONE B	Status	21-61-04
TRIM VALVE ZONE C	Status	21-61-04
TRIM VALVE ZONE D	Status	21-61-04

Message	Level	MEL Item
VENTILATION ALTN	Advisory	21-21-01
VENTILATION ALTN VALVE	Status	21-21-01
VHF DATALINK	Advisory	23-12-01-01
VHF DATALINK OFF	Memo	N/A
VHF SQUELCH OFF	Memo	N/A
VMO GEAR DOWN	Memo	N/A
VNAV STEP CLIMB	Advisory	N/A
VOICE RECORDER SYS AFT	Status	31-31-01-01
VOICE RECORDER SYS FWD	Status	31-31-01-01
VOR L	Status	34-31-03
		34-31-04
VOR R	Status	34-31-04

Message	Level	MEL Item
WEATHER RADAR SYS	Advisory	34-42-01
WEATHER RADAR SYS L	Status	34-42-01
WEATHER RADAR SYS R	Status	34-42-01
WINDOW HEAT	Advisory	30-41-01
		30-41-02
WINDOW HEAT BACKUP L	Status	30-41-03
WINDOW HEAT BACKUP R	Status	30-41-03
WINDOW HEAT L FWD	Advisory	30-41-01
WINDOW HEAT L FWD	Status	30-41-01
WINDOW HEAT L SIDE	Advisory	30-41-02
WINDOW HEAT L SIDE	Status	30-41-02
WINDOW HEAT R FWD	Advisory	30-41-01
WINDOW HEAT R FWD	Status	30-41-01

Message	Level	MEL Item
WINDOW HEAT R SIDE	Advisory	30-41-02
WINDOW HEAT R SIDE	Status	30-41-02
WINDOW HEAT S/W	Status	None
WINDOW HEAT S/W CONFIG	Status	30-41-05
WINDSHEAR PREDICTIVE L	Status	34-42-01-01
WINDSHEAR PREDICTIVE R	Status	34-42-01-01
WINDSHEAR REACTIVE L	Status	34-42-05-02
WINDSHEAR REACTIVE R	Status	34-42-05-02
WINDSHEAR SYS	Advisory	34-42-01-01
		34-42-05-02
WING ANTI-ICE CHANNEL	Status	30-11-01-02
WING ANTI-ICE OFF	Advisory	N/A
WING ANTI-ICE SYS	Status	30-11-01
WING ANTI-ICE ZONE	Status	30-11-01-01
WIPER L	Status	30-42-01
WIPER R	Status	30-42-01
WIPS SW CONFIG	Status	None

Message	Level	MEL Item
ZONAL DRYER AFT	Status	21-72-01
ZONAL DRYER FWD	Status	21-72-01
ZONE HEATER A1	Status	21-45-05
ZONE HEATER B1	Status	21-45-05

Table of Contents

Section 2

MINIMUM EQUIPMENT LIST (MEL) ITEMS . . . . . Section 2-1

Table Of Contents . . . . . Section 2-1

Introduction . . . . . Section 2-2
- General Notes . . . . . Section 2-2
- Description and Use of MEL . . . . . Section 2-2
- MEL Definitions . . . . . Section 2-3
- Extension of Repair Interval for MEL Items . . . . . Section 2-5
- Responsibility for Application of MEL . . . . . Section 2-5
- Placards . . . . . Section 2-6
- Engine Indication and Crew Alerting System (EICAS) . . . . . Section 2-6
- Fuel Burn Penalty Negligibility Criteria . . . . . Section 2-6

Introduction (Preamble)

General Notes

MEL provides an aid for flight and maintenance crew in an effort to bring the aircraft from its point of origin to its point of destination safely and on schedule.

The list has been prepared according to the requirements of the official regulations. If there are no applicable Thai regulation, then use EASA CS-MMEL latest version.

The MEL is not applicable for inflight malfunctions (except for Section 4). Should an inflight malfunction occur, the actions taken shall be as outlined in the Non-Normal Checklist of the affected system.

For documents required to be on board, refer to List and Location of Document in Flight Deck.

MEL Items have a table of contents for each ATA. Each section of information in the MEL has been assigned a unique number and when appropriate, is followed by maintenance or operations information.

Description and Use of MEL

This Minimum Equipment List (MEL) development base on Dispatch Deviations Guides (DDG).

Revision No.18 and FAA Master Minimum Equipment List (FAA MMEL) Revision No.18.

The MEL cannot be less restrictive than the FAA MMEL and DDG. MEL includes procedure for acceptance of defects and the requirement of using MEL before takeoff thrust on the runway.

As a general rule, the MEL shall be referred to only if repair or replacement of unserviceable units cannot be made prior to scheduled departure.

The MEL specifies equipment or systems which must be operative or may be wholly or partly inoperative without sacrificing flight safety or seriously reducing passenger comfort. However, equipment or systems obviously basic to aircraft airworthiness such as wings, rudders, flaps, engines, landing gear, etc. are not listed and must be operative for all flights.

It is important to note that all items which are related to the airworthiness of the aircraft and not included in the MEL are automatically required to be operative.

If there is any doubt as to whether the equipment may be required or not, the P-i-C should request advice from BKKPC via BKKOP before a final decision is taken.

Dispatching an aircraft with multiple MEL items inoperative is permitted. However, it must be determined prior to dispatch that the net effect of multiple discrepancies will not result in a degradation in the level of safety and/or undue increase in crew workload.

MEL Definitions

1. System Definitions. System numbers are based on the Air Transport Association (ATA) Specification Number 100 and items are numbered sequentially.
    - A. "Item" means the equipment, system, component, or function listed in the Item Heading.
    - B. "Number Installed" (**Installed**) is the number (quantity) of items normally installed in the aircraft. This number represents the aircraft configuration considered in developing this MEL. Should the number be a variable (e.g., passenger cabin items) a number is not required. " - " symbol indicates a variable number (quantity) of installed item.
    - C. "Number Required for Dispatch" (**Required**) is the minimum number (quantity) of items required for operation provided the conditions specified are met. " - " symbol indicates a variable number (quantity) of required item.
    - D. "Remarks or Exceptions" includes a statement either prohibiting or permitting operation with a specific number of items inoperative, provisos (conditions and limitations) for such operation, and appropriate notes. "Notes:" provides additional information for crewmember or maintenance consideration. Notes are used to identify applicable material which is intended to assist with compliance, but do not relieve THAI of the responsibility for compliance with all applicable requirements. Notes are not a part of the provisos.
2. "Inoperative" means a system and/or component malfunction to the extent that it does not accomplish its intended purpose and/or is not consistently functioning normally within its approved operating limit(s) or tolerance(s).
3. "(M)" symbol indicates a requirement for a specific maintenance procedure which must be accomplished prior to operation with the listed item inoperative.
4. "(MV)" symbol indicates that, if dispatched per the MEL item there will be a significant impact on operations, for example, performance penalty or blocked seats.
5. "(O)" symbol indicates a requirement for a specific operations procedure which must be accomplished in planning for and/or operating with the listed item inoperative.
6. "(P)" symbol indicates the item must be placarded to inform and remind crewmember and maintenance personnel of the equipment condition.
7. "Repair Intervals" (**Interval**) specify the time interval in which the aircraft may be operated with the item inoperative. After the specified time interval, or if the time interval remaining is not sufficient to complete the next flight, the aircraft is not permitted to be dispatched from any station until the inoperative item has been repaired. The time interval, therefore, provides indication of the time in which the inoperative item must be repaired. Time intervals are divided into the following categories:
    - A. Category A. Items in this category shall be repaired within the time interval specified under Remarks or Exceptions of the MEL. For time intervals specified in "flight days" or "calendar days", the day the malfunction was recorded in the aircraft maintenance logbook is excluded. For all other time intervals (flights, flight legs, cycles, hours, etc.), repair tracking begins at the point when the malfunction is deferred in accordance with the MEL.
    - B. Category B. Items in this category may be inoperative for dispatch but shall be repaired within three (3) consecutive calendar days (72 hours), excluding the day the malfunction was recorded in the aircraft logbook. For example, if it was recorded at 10 a.m. on Jan 26, the 3-day interval would begin at midnight on the 26th and end at midnight on the 29th.
    - C. Category C. Items in this category may be inoperative for dispatch but shall be repaired within ten (10) consecutive calendar days (240 hours) excluding the day the malfunction was recorded in the aircraft logbook. For example, if it was recorded at 10 a.m. on Jan 26, the 10-day interval would begin at midnight on the 26th and end at midnight on February 5.

D. Category D. Items in this category may be inoperative for dispatch but shall be repaired within 120 consecutive calendar days (2880 hours) excluding the day the malfunction was recorded.

Note: Repair intervals are counted in UTC.

Note: Repair intervals are not specified for items which are not required by regulations or do not have direct impact on operation of flight or flight safety. These items have (–) in the Repair Interval column.

Note: Some MEL items may have repair intervals which differ from the intervals specified in the MMEL. These repair intervals are specified in accordance with requirements from The Civil Aviation Authority of Thailand (CAAT).

Note: For economic reasons, these items shall be repaired as soon as possible.

8. "Icing conditions" means an atmospheric environment that may cause ice to form on the aircraft or in the engines.
9. "Flight Day" means a 24 hour period (from midnight to midnight) Universal Coordinated Time (UCT) during which at least one flight is initiated.
10. "Considered Inoperative", as used in the provisos means that item must be treated for dispatch, taxi and flight purposes as though it were inoperative. The item shall not be used or operated until the original deferred item is repaired. Additional actions include: documenting the item on the dispatch release (if applicable), placarding, and complying with all remarks, exceptions, and related MEL provisions, including any (M) and (O) procedures and observing the repair category.

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Extension of Repair Interval for MEL Items

Maintenance Control Center Department (BKKLC-C) is responsible for controlling Aircraft Rectification Interval Extensions. In circumstances when there is insufficient ground time to meet the repair time limit or when spare parts are not available, the Quality Assurance Department (BKKTA) is authorized to apply a one-time repair interval extension for Category B, C and D MEL items in accordance with General Maintenance Manual (GMM) 1.1.7 and TTPM-TA 620. The Civil Aviation Authority of Thailand (CAAT) shall be notified of the extension in advanced. A copy of the Dispensation Letter shall be placed in the Technical Logbook. If the P-i-C considers that the inoperative item will not adversely affect the flight and all the conditions in the MEL have been fulfilled, he can then accept the aircraft for flight.

Repair interval for Category A MEL items cannot be extended.

Responsibility for Application of MEL

Close cooperation is required between the P-i-C and Maintenance in order to determine the best course of action to be taken when a system or component failure has occurred. Failures in the cabin, galley or lavatory systems require cooperation with the Inflight Manager.

1. Maintenance responsibility
    - A. To make every effort to have the aircraft fully serviceable prior to scheduled departure time.
    - B. If it becomes evident that the failure cannot be corrected in time, inform the P-i-C as early as possible and obtain his decision as to whether repair shall be made or not.
    - C. If the item is marked with (MV), send MAINTAVI message as soon as possible.
    - D. To identify the failure and repair interval in Flight Deck Log and ensure that the fault is definitely localized and isolated according to appropriate procedure in the MM so that it will not affect the operation of any other system.
    - E. To ensure that the failure is repaired within the specified repair interval.
    - F. To placard the affected system or item in a suitable manner.
    - G. To issue Maintenance Release.
2. Pilot-in-Command’s responsibility
    - A. To take the final decision as to whether the subject failure has to be remedied prior to takeoff or if he can accept the aircraft without corrective action in order to avoid delaying the flight. The P-i-C is, however, not allowed to commence a takeoff with less equipment functioning than required by the MEL.
    - B. To ensure that he is aware of all operational and technical consequences of the failure concerned, and when applicable, check that the system is isolated or deactivated by means of associated controls and/or indicating systems.

Placards

1. Placards for inoperative aircraft system/component is placed close to the switch/control of the inoperative system/equipment. For inoperative system/component that has no switch/control, the placard is placed on the associated system panel.
2. Inoperative systems/components that result in unusable facilities in the cabin such as passenger/crew seats, lavatories, overhead stowage bin/closet are placarded “INOPERATIVE PLEASE DO NOT USE”.
3. Passenger seats assigned for cabin crew are placarded “RESERVED”.

Engine Indication and Crew Alerting System (EICAS)

EICAS provides different priority levels of system messages (WARNING, CAUTION, ADVISORY, STATUS and MAINTENANCE). Any messages that affects airplane dispatch status will be displayed at a STATUS message level or higher. The absence of an EICAS STATUS or higher level (WARNING, CAUTION, ADVISORY) indicates that the system/component is operating within its approved operating limits or tolerances.

System conditions that result only in a maintenance level message, i.e. no correlation with a higher level EICAS message, do not affect dispatch and do not require action other than as addressed within THAI standard maintenance program.

Fuel Burn Penalty Negligibility Criteria

Performance penalties resulting in increased flight planning fuel can be considered negligible if the penalty is less than 0.5%.

Table of Contents

ATA 21 **AIR CONDITIONING** . . . . **ATA 21-1**
Table Of Contents . . . . **ATA 21-1**
21-00-01 **Air Synoptic Display** . . . . **ATA 21-9**
21-21-01 **Alternate Ventilation System (787-8)** . . . . **ATA 21-10**
21-21-02 **AVS VENTILATION Switch** . . . . **ATA 21-11**
  21-21-02-01 **ALTN Light** . . . . **ATA 21-11**
  21-21-02-02 **NORM Light** . . . . **ATA 21-12**
21-22-01 **Flight Deck Boost Fan** . . . . **ATA 21-13**
21-22-02 **Flight Deck Boost Isolation Valve** . . . . **ATA 21-14**
21-25-01 **Recirculation Fans** . . . . **ATA 21-15**
  21-25-01-01 **787-8** . . . . **ATA 21-15**
    21-25-01-01-01 **Upper Recirculation Fan** . . . . **ATA 21-15**
    21-25-01-01-02 **Lower Recirculation Fan** . . . . **ATA 21-16**
  21-25-01-02 **787-9** . . . . **ATA 21-17**
    21-25-01-02-01 **Upper Recirculation Fan** . . . . **ATA 21-17**
    21-25-01-02-02 **Lower Recirculation Fans** . . . . **ATA 21-18**
  21-25-01-04 **RECIRC FANS Switch ON Lights** . . . . **ATA 21-19**
21-25-02 **Lavatory/Galley Crown Temperature Sensor System** . . . . **ATA 21-20**
21-26-01 **Lavatory/Galley Ventilation Fans** . . . . **ATA 21-21**
21-26-02 **Lavatory/Galley Flow And Temperature Sensor** . . . . **ATA 21-22**
21-26-03 **Lavatory/Galley Ventilation PECS Liquid Heat Exchanger Barrier Filter** . . . . **ATA 21-23**
21-27-01 **Forward EE Cooling Supply Barrier Filter** . . . . **ATA 21-24**
21-27-02 **Forward EE Cooling Exhaust Fan** . . . . **ATA 21-25**
  21-27-02-01 **Forward EE Cooling Exhaust Fan** . . . . **ATA 21-25**
21-27-03 **Forward EE Cooling Supply Flow/Temperature Sensors** . . . . **ATA 21-26**
21-27-04 **Forward EE Cooling Exhaust Overboard Vent Valve** . . . . **ATA 21-27**

21-27-05 Forward EE Cooling Override/Smoke Clearance Valve Motors . . . . . ATA 21-28
21-27-06 Forward EE Cooling Supply Fans . . . . . ATA 21-29
21-27-07 Forward EE Cooling Smoke Detectors . . . . . ATA 21-30
 21-27-07-01 Supply Fan Smoke Detector . . . . . ATA 21-30
 21-27-07-02 Exhaust Fan Smoke Detector . . . . . ATA 21-31
21-27-08 Forward EQUIP COOLING Switch Lights . . . . . ATA 21-32
 21-27-08-01 OVRD Light . . . . . ATA 21-32
 21-27-08-02 AUTO Light . . . . . ATA 21-33
21-27-21 Aft EE Cooling Supply Barrier Filter . . . . . ATA 21-34
21-27-22 Aft EE Cooling Exhaust Fan . . . . . ATA 21-35
 21-27-22-01 Aft EE Cooling Exhaust Fan . . . . . ATA 21-35
21-27-23 Aft EE Cooling Flow/Temperature Sensors . . . . . ATA 21-36
21-27-24 Aft EE Cooling Overboard Exhaust (Skin Flush) Valve . . . . . ATA 21-37
 21-27-24-01 787-8 . . . . . ATA 21-37
 21-27-24-02 787-9 . . . . . ATA 21-38
21-27-25 Aft EE Cooling Supply Override/Smoke Clearance Valve Motors . . . . . ATA 21-39
21-27-26 Aft EE Cooling Supply Fan . . . . . ATA 21-40
21-27-27 Aft EE Cooling Smoke Detectors . . . . . ATA 21-41
 21-27-27-01 Supply Fan Smoke Detector . . . . . ATA 21-41
 21-27-27-02 Exhaust Fan Smoke Detector . . . . . ATA 21-42
21-27-28 Aft Cargo Heat Valve . . . . . ATA 21-43
 21-27-28-01 AFT Cargo Heat Valve . . . . . ATA 21-43
21-27-29 Aft EQUIP COOLING Switch Lights . . . . . ATA 21-44
 21-27-29-01 OVRD Light . . . . . ATA 21-44
 21-27-29-02 AUTO Light . . . . . ATA 21-45
21-27-31 Miscellaneous EE Cooling Exhaust Fan (787-8) . . . . . ATA 21-46
21-27-32 Miscellaneous EE Cooling Exhaust Fan Smoke Detector (787-8) . . . . . ATA 21-47
21-29-01 Overhead Flight Crew Rest (OFCR) Supply Shutoff And Smoke Clearance/Exhaust Valves . . . . . ATA 21-48

21-29-01A Alternate Procedures Used . . . . . ATA 21-48
21-29-01B Procedures Do Not Require Its Use . . . . . ATA 21-49
21-29-02 Overhead Flight Attendant Rest (OFAR) Supply Shutoff And Smoke Clearance/Exhaust Valves . . . . . ATA 21-50
21-29-02A Alternate Procedures Used . . . . . ATA 21-50
21-29-02B Procedures Do Not Require Its Use . . . . . ATA 21-51
21-31-01 Automatic Cabin Pressure Control Channels . . . . . ATA 21-52
21-31-01A Pressurized Flight . . . . . ATA 21-52
21-31-01B Unpressurized Flight . . . . . ATA 21-53
21-31-02 Manual Cabin Pressure Outflow Valve Controls (FWD And AFT) . . . . . ATA 21-56
21-31-02A Extended Overwater Flight Prohibited . . . . . ATA 21-56
21-31-02B Outflow Valve Considered Inoperative . . . . . ATA 21-57
21-31-03 Forward And Aft Outflow Valves . . . . . ATA 21-58
21-31-03-01 787-8 . . . . . ATA 21-59
21-31-03-01-01 Forward Outflow Valve . . . . . ATA 21-59
21-31-03-01-03 Aft Outflow Valve . . . . . ATA 21-61
21-31-03-02 787-9 . . . . . ATA 21-63
21-31-03-02-01 Forward Outflow Valve . . . . . ATA 21-63
21-31-03-02-03 Aft Outflow Valve . . . . . ATA 21-65
21-03-03-03 OUTFLOW VALVE Switch MAN Lights . . . . . ATA 21-68
21-03-03-04 OUTFLOW VALVE Switch AUTO Lights . . . . . ATA 21-69
21-31-04 Remote Sensor Units . . . . . ATA 21-70
21-31-05 Cabin Rate Of Climb Indication . . . . . ATA 21-71
21-31-05A Cabin Pressure Controls Operate Normally . . . . . ATA 21-71
21-31-05B Unpressurized Flight . . . . . ATA 21-72
21-31-06 Cabin Differential Pressure Indication . . . . . ATA 21-73
21-31-06A Cabin Altitude Indication Operates Normally . . . . . ATA 21-73
21-31-06B Unpressurized Flight . . . . . ATA 21-74
21-31-07 Cabin Altitude Indication . . . . . ATA 21-75

21-31-07A Differential Pressure Indication Operates Normally ATA 21-75
21-31-07B Unpressurized Flight ATA 21-76
21-31-08 Outflow Valve Position Indications (787-8) ATA 21-77
21-31-09 Auto Cabin Pressure Control Communication System ATA 21-78
21-32-01 Positive Pressure Relief Valves ATA 21-79
21-32-01A Valve Deactivated ATA 21-79
21-32-01B Unpressurized Flight ATA 21-80
21-32-02 Negative Pressure Relief Valve ATA 21-81
21-41-01 Overhead Flight Crew Rest (OFCR) Duct Heater System ATA 21-84
24-41-02 Overhead Flight Attendant Rest (OFAR) Duct Heater System ATA 21-85
21-43-01 Forward Cargo Heat Supply Shutoff Valve ATA 21-86
21-43-02 Forward Cargo Heat Exhaust System ATA 21-87
21-43-03 Forward Cargo Heat Electric Heater ATA 21-88
21-43-03-01 787-8 ATA 21-88
21-43-03-02 787-9 ATA 21-89
21-43-04 Forward CARGO TEMP Switch Lights ATA 21-90
21-43-04-01 OFF Light ATA 21-90
21-43-04-02 AUTO Light ATA 21-91
21-44-01 Bulk Cargo Heat System ATA 21-92
21-44-01-01 Electric Heaters ATA 21-93
21-44-01-02 Bulk CARGO TEMP Switch OFF Light ATA 21-94
21-44-01-03 Bulk CARGO TEMP Switch AUTO Light ATA 21-95
21-44-02 Item Moved ATA 21-96
21-44-03 Item Moved ATA 21-97
21-44-04 Item Moved ATA 21-98
21-45-01 Flight Deck Foot Rest Surface Heaters ATA 21-99
21-45-02 Flight Deck Shoulder Duct Heaters ATA 21-100
21-45-03 Galley Area Duct Heaters ATA 21-101

21-45-04 **Passenger Entry Door Area Floor Panel Surface Heater** . . . . **ATA 21-102**
21-45-05 **Zonal Duct Heaters** . . . . **ATA 21-103**
21-51-01 **Cabin Air Compressor (CAC) Systems** . . . . **ATA 21-104**
  21-51-01-02 **Airplanes With OFCR and OFAR Installed** . . . . **ATA 21-104**
    21-51-01-02-01 **Left CACs** . . . . **ATA 21-104**
      21-51-01-02-01-01 **787-8/-9** . . . . **ATA 21-104**
      21-51-01-02-01-03 **787-8/-9** . . . . **ATA 21-107**
    21-51-01-02-02 **Right CACs** . . . . **ATA 21-108**
      21-51-01-02-02-01 **787-8/-9** . . . . **ATA 21-108**
      21-51-01-02-02-03 **787-8/-9** . . . . **ATA 21-109**
21-51-02 **Cabin Air Compressor (CAC) Deflector Doors** . . . . **ATA 21-110**
  21-51-02A **Door Retracted** . . . . **ATA 21-110**
  21-51-02B **Door Extended** . . . . **ATA 21-112**
21-51-03 **Cabin Air Compressor (CAC) Inlet Pressure Sensors** . . . . **ATA 21-114**
  21-51-03-01 **Left Inlet Pressure Sensors** . . . . **ATA 21-114**
    21-51-03-01A **Left Air Conditioning Pack Operates** . . . . **ATA 21-114**
    21-51-03-01B **L eft Air Conditioning Pack Considered Inoperative** . . . . **ATA 21-115**
  21-51-03-02 **Right Inlet Pressure Sensors** . . . . **ATA 21-116**
    21-51-03-02A **Right Air Conditioning Pack Operates** . . . . **ATA 21-116**
    21-51-03-02B **Right Air Conditioning Pack Considered Inoperative** . . . . **ATA 21-117**
21-51-04 **Cabin Air Compressor (CAC) Variable Diffusers** . . . . **ATA 21-118**
21-51-05 **Cabin Air Compressor (CAC) Add Heat Valves** . . . . **ATA 21-119**
21-51-06 **Cabin Air Compressor (CAC) Outlet Pressure Sensors** . . . . **ATA 21-120**
21-51-07 **Cabin Air Compressor (CAC) Outlet Temperature Sensor Systems** . . . . **ATA 21-121**
21-51-08 **Cabin Air Compressor (CAC) Flow Sensors** . . . . **ATA 21-122**
21-51-09 **Pack Control Unit (PCU) Channels** . . . . **ATA 21-123**
  21-51-09-01 **Left PCU Channels** . . . . **ATA 21-123**
    21-51-09-01A **Left Air Conditioning Pack Operates** . . . . **ATA 21-123**

21-51-09-01B Left Air Conditioning Pack Considered Inoperative . . . . . ATA 21-124
21-51-09-02 Right PCU Channels . . . . . ATA 21-125
21-51-09-02A Right Air Conditioning Pack Operates . . . . . ATA 21-125
21-51-09-02B Right Air Conditioning Pack Considered Inoperative . . . . . ATA 21-126
21-52-01 Air Conditioning Packs . . . . . ATA 21-127
21-52-01-02 Airplanes With OFCR and OFAR Installed . . . . . ATA 21-127
21-52-01-02-01 Airplanes With OFCR and OFAR Installed . . . . . ATA 21-127
21-52-01-03 PACK Switch OFF Lights . . . . . ATA 21-132
21-52-01-04 PACK Switch AUTO Lights . . . . . ATA 21-133
21-52-03 Air Cycle Machines (ACM) . . . . . ATA 21-134
21-52-03A Pack Considered Inoperative . . . . . ATA 21-134
21-52-03B ACM Deactivated . . . . . ATA 21-135
21-52-04 Air Cycle Machine (ACM) Compressor Outlet Temperature Sensor Systems . . . . . ATA 21-137
21-52-05 Condenser Inlet Temperarture Control Systems . . . . . ATA 21-138
21-52-05-01 Low Limit Valve . . . . . ATA 21-138
21-52-05-02 Condenser Inlet Temperature Sensor Systems . . . . . ATA 21-141
21-52-06 Secondary Heat Exchanger Outlet Temperature Sensor Systems . . . . . ATA 21-142
21-52-07 Pack Outlet Temperature Sensor Systems . . . . . ATA 21-143
21-52-08 Economy Cooling Valves (ECV) . . . . . ATA 21-144
21-52-09 Air Cycle Machine Bypass Valves . . . . . ATA 21-146
21-52-10 Ram Air Inlet Door Systems . . . . . ATA 21-147
21-52-11 Ram Air Outlet Door Systems . . . . . ATA 21-149
21-52-11A Door Can Be Locked in Fixed Position . . . . . ATA 21-149
21-52-11B Door Cannot Be Locked in Fixed Position . . . . . ATA 21-151
21-52-12 Ram Air Fan . . . . . ATA 21-153
21-52-12-01 Left Ram Air Fan . . . . . ATA 21-153
21-52-12-02 Right Ram Air Fan . . . . . ATA 21-156
21-52-12-03 Left Ram Air Fan Motor Controller . . . . . ATA 21-159

21-52-12-04 Right Ram Air Fan Motor Controller . . . ATA 21-161
21-52-12-05 Ram Air Fan . . . ATA 21-163
21-52-12-05-01 787-8 . . . ATA 21-163
21-52-12-05-02 787-9 . . . ATA 21-164
21-52-12-06 Ram Air Fan . . . ATA 21-165
21-52-12-06-01 787-8 . . . ATA 21-165
21-52-12-06-02 787-9 . . . ATA 21-166
21-52-13 Pack Bay Overheat Detection System (ODS) . . . ATA 21-167
21-52-13-01 Pack Bay Overheat Detection Channels . . . ATA 21-167
21-52-13-02 Loops . . . ATA 21-168
21-53-01 Integrated Cooling System (ICS) . . . ATA 21-169
21-53-01-01 Recirculation Cooling Air System . . . ATA 21-169
21-53-01-02 Individual Components . . . ATA 21-170
21-53-01-02A System Deactivated . . . ATA 21-170
21-53-01-02B Individual Components Isolated . . . ATA 21-172
21-53-02 Integrated Cooling System (ICS) Pressure Control/Temperature Sensing System (787-9) . . . ATA 21-176
21-53-03 Integrated Cooling System (ICS) Recirculation Valves . . . ATA 21-177
21-53-03-01 Upper Recirculation Valve . . . ATA 21-177
21-53-03-02 Lower Recirculation Valve . . . ATA 21-178
21-53-04 Integrated Cooling System (ICS) Galley Bypass Valve . . . ATA 21-179
21-61-01 Flight Deck Zone Trim Valves . . . ATA 21-180
21-61-02 Flight Deck Zone Duct Temperature Sensor Systems . . . ATA 21-182
21-61-03 Flight Deck Zone Air Temperature Sensor System . . . ATA 21-184
21-61-04 Cabin Zone Trim Valves . . . ATA 21-185
21-61-05 Cabin Zone Duct Temperature Sensor Systems . . . ATA 21-187
21-61-05-01 Zones A1 and B1 . . . ATA 21-187
21-61-05-02 Zones A2, B2, C, and D . . . ATA 21-188
21-61-05-02A Modulating Valve Deactivated Closed . . . ATA 21-188

21-61-05-02B Trim Air Switch Remains Off . . . . . ATA 21-190
21-62-01 Trim Air Pressure Regulator Valves . . . . . ATA 21-191
21-62-01-01 TRIM AIR Switch FAULT Lights . . . . . ATA 21-193
21-62-01-02 TRIM AIR Switch ON Lights . . . . . ATA 21-194
21-62-02 Trim Air Pressure Sensor Systems . . . . . ATA 21-195
21-71-02 Overhead Flight Crew Rest (OFCR) Humidification System . . . . . ATA 21-196
21-71-03 Overhead Flight Attendant Rest (OFAR) Humidification System . . . . . ATA 21-197
21-72-01 Zonal Dryer Systems . . . . . ATA 21-198
21-73-01 Ozone Converters . . . . . ATA 21-199
21-81-01 Power Electronics Cooling System (PECS) Aft Section . . . . . ATA 21-200
21-81-02 Power Electronics Cooling System (PECS) Fluid Level Sensor Systems . . . . . ATA 21-202
21-81-03 Power Electronics Cooling System (PECS) Liquid ICS/SCU Supply Shutoff Valve . . . . . ATA 21-203
21-81-04 Power Electronics Cooling System (PECS) Liquid ICS/SCU Supply Pressure Sensor Systems . . . . . ATA 21-204
21-81-05 Power Electronics Cooling System (PECS) Pumps . . . . . ATA 21-205
21-81-06 Power Electronics Cooling System (PECS) Temperature Control Systems . . . . . ATA 21-207
21-81-06-01 Liquid Cooling Temperature Control Valves . . . . . ATA 21-207
21-81-06-02 Liquid Cooling Temperature Sensors . . . . . ATA 21-208
21-81-07 Power Electronics Cooling System (PECS) Liquid Pump Filter . . . . . ATA 21-210

21-00-01 Air Synoptic Display

Interval	Installed	Required	Procedure
C	1	0	**(P)**

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OPERATIONS NOTE

1. For missing data on the Synoptic Display, selecting an alternate location for the display (Captain’s Inboard, First Officer’s Inboard, or Lower) may restore the missing data. Synoptic Displays ontaining missing data may continue to be used to the extent remaining data is useful. Airplane system faults will be annunciated by alerting and status messages.

21-21-01 Alternate Ventilation System (787-8)

TQA to TQF

Interval	Installed	Required	Procedure
C	1	0	**(M) (P)**

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May be inoperative provided:

a. Alternate ventilation inlet valve is deactivated closed.
b. Air conditioning packs operate normally.

MAINTENANCE (M)

Note: For an air conditioning pack to be operating normally, certain items associated with that system must operate normally. See MEL Item 21-51-01 for a list of those items.

Deactivate alternate ventilation inlet valve closed (AMM DDG 21-21-01).

1. Using a flight deck multi-function display only, open circuit breaker ACTUATOR-ALTERNATE VENT and lock with an INOP tag.
2. If AVS inlet door is not closed:
    - A. Gain access to the AVS door actuator.
    - B. Disconnect, cap and stow actuator electrical connector.
    - C. Disconnect the AVS inlet actuator from the AVS inlet door and from the forward clevis.
    - D. Adjust the actuator pushrod until it is fully extended.
    - E. Reconnect actuator to inlet door and clevis.

21-21-02 AVS VENTILATION Switch

21-21-02-01 ALTN Light

Interval	Installed	Required	Procedure
C	1	0	**(P)**

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21-21-02 **AVS VENTILATION Switch**

21-21-02-02 **NORM Light**

Interval	Installed	Required	Procedure
C	1	0	**(P)**

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21-22-01 Flight Deck Boost Fan

Interval	Installed	Required	Procedure
C	1	0	**(M) (P)**

May be inoperative provided:

a. Fan is deactivated.

b. Air conditioning packs operate normally.

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MAINTENANCE (M)

Note: For an air conditioning pack to be operating normally, certain items associated with that system must operate normally. See MEL Item 21-51-01 for a list of those items.

Deactivate flight deck boost fan (AMM DDG 21-22-01).

1. Using a flight deck multi-function display only, open circuit breaker FLT DECK BOOST FAN and lock with an INOP tag.

21-22-02 Flight Deck Boost Isolation Valve

Interval	Installed	Required	Procedure
C	1	0	**(M) (P)**

May be inoperative provided:

a. Flight deck boost isolation valve is deactivated closed.
b. Air conditioning packs operate normally.

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MAINTENANCE (M)

Note: For an air conditioning pack to be operating normally, certain items associated with that system must operate normally. See MEL Item 21-51-01 for a list of those items

Deactivate flight deck boost fan (AMM DDG 21-22-02).

1. Using a flight deck mult-function display only, open the following circuit breakers and lock with an INOP tag:
   - BOOST SUPPLY VLV CLOSE-FLT DECK
   - BOOST SUPPLY VLV OPEN-FLT DECK
2. Gain access to flight deck boost isolation valve.
3. Manually turn the open/close knob until the valve is fully closed.

21-25-01 Recirculation Fans

21-25-01-01 **787-8** **TQA to TQF**

21-25-01-01-01 **Upper Recirculation Fan**

Interval	Installed	Required	Procedure
C	1	0	**(M) (P)**

May be inoperative deactivated:

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MAINTENANCE (M)

Deactivate the upper recirculation fan (AMM DDG 21-25-01).

1. Using a flight deck multi-function display only, open the following circuit breakers and lock with an INOP tag:
   - MC-UPPR RECIRC FAN UPPER
   - RECIRC FAN-UPR

21-25-01 **Recirculation Fans**
21-25-01-01 **787-8** **TQA to TQF**
21-25-01-01-02 **Lower Recirculation Fan**

Interval	Installed	Required	Procedure
C	2	1	**(M) (P)**

One may be inoperative provided:

a. Inoperative fan is deactivated.
b. Air conditioning packs operate normally.
c. At least one left cabin air compressor operates normally.
d. At least one right cabin air compressor operates normally.

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MAINTENANCE (M)

Note: 1. For an air conditioning pack to be operating normally, certain items associated with that system must operate normally. See MEL Item 21-51-01 for a list of those items.
2. For a cabin air compressor to be operating normally, certain items must operate normally. See MEL Item 21-52-01 for a list of those items.

Deactivate the inoperative lower recirculation fan (AMM DDG 21-25-01).

1. For lower left recirculation fan inoperative:
    A. Using a flight deck multi-function display only, open the following circuit breakers and lock with an INOP tag:
        - MC-LWR L RECIRC FAN
        - RECIRC FAN-LWR L
2. For lower right recirculation fan inoperative:
    A. Using a flight deck multi-function display only, open the following circuit breakers and lock with an INOP tag:
        - MC-LWR R RECIRC FAN
        - RECIRC FAN-LWR R

21-25-01 **Recirculation Fans**

21-25-01-02 **787-9** TWA to TWB

21-25-01-02-01 **Upper Recirculation Fan**

Interval	Installed	Required	Procedure
C	1	0	**(M) (P)**

May be inoperative provided:

a. Fan is deactivated.

b. Air conditioning packs operate normally.

c. At least one left cabin air compressor operates normally.

d. At least one right cabin air compressor operates normally.

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MAINTENANCE (M)

Note: 1. For an air conditioning pack to be operating normally, certain items associated with that system must operate normally. See MEL Item 21-51-01 for a list of those items.

2. For a cabin air compressor to be operating normally, certain items must operate normally. See MEL item 21-52-01 for a list of those items.

Deactivate the upper recirculation fan (AMM DDG 21-25-01).

1. Using a flight deck multi-function display only, open the following circuit breakers and lock with an INOP tag:
    - MC-UPPR RECIRC FAN UPPER
    - RECIRC FAN-UPR

21-25-01 **Recirculation Fans**
21-25-01-02 **787-9**
TWA to TWB

21-25-01-02-02 **Lower Recirculation Fans**

Interval	Installed	Required	Procedure
C	2	1	**(M) (P)**

One may be inoperative provided:
a. Inoperative fan is deactivated.
b. Air conditioning packs operate normally.
c. At least one left cabin air compressor operates normally.
d. At least one right cabin air compressor operates normally.

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MAINTENANCE (M)

Note: 1. For an air conditioning pack to be operating normally, certain items associated with that system must operate normally. See MEL Item 21-51-01 for a list of those items.
2. For a cabin air compressor to be operating normally, certain items must operate normally. See MEL Item 21-52-01 for a list of those items.

Deactivate the inoperative lower recirculation fan (AMM DDG 21-25-01).

1. For lower left recirculation fan inoperative:
   A. Using a flight deck multi-function display only, open the following circuit breakers and lock with an INOP tag:
      - MC-LWR L RECIRC FAN
      - RECIRC FAN-LWR L
2. For lower right recirculation fan inoperative:
   A. Using a flight deck multi-function display only, open the following circuit breakers and lock with an INOP tag:
      - MC-LWR R RECIRC FAN
      - RECIRC FAN-LWR R

21-25-01 Recirculation Fans

21-25-01-04 RECIRC FANS Switch ON Lights

Interval	Installed	Required	Procedure
C	2	0	**(P)**

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UNCONTROLLED IF DOWNLOADED OR PRINTED

21-25-02 Lavatory/Galley Crown Temperature Sensor System

Interval	Installed	Required	Procedure
C	1	0	**(P)**

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21-26-01 Lavatory/Galley Ventilation Fans

Interval	Installed	Required	Procedure
C	2	1	**(M) (P)**

One may be inoperative deactivated.

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MAINTENANCE (M)

Deactivate the inoperative lavatory/galley ventilation fan (AMM DDG 21-26-01).

1. For fan 1 inoperative:
   A. Using a flight deck multi-function display only, open the following circuit breakers and lock with an INOP tag:
      - MC-LAV GALLEY FAN 1
      - LAV GALLEY FAN 1
2. For fan 2 inoperative:
   A. Using a flight deck multi-function display only, open the following circuit breakers and lock with an INOP tag:
      - MC-LAV GALLEY FAN 2
      - LAV GALLEY FAN 2

21-26-02 Lavatory/Galley Flow and Temperature Sensor

Interval	Installed	Required	Procedure
C	1	0	**(M) (P)**

May be inoperative deactivated.

MAINTENANCE (M)

Deactivate lavatory/galley flow and temperature sensor (AMM DDG 21-26-02).

1. Using a flight deck multi-function display only, open the LAV GALLEY FLOW DET circuit breaker and lock with an INOP tag.

21-26-03 Lavatory/Galley Ventilation PECS Liquid Heat Exchanger Barrier Filter

Interval	Installed	Required	Procedure
C	1	0	**(M) (P)**

May be inoperative provided:

a. Lavatory/galley flow and temperature sensor is deactivated.

Note: Deactivation of lavatory/galley flow and temperature sensor results in display of LAVATORY/GALLEY FLOW DET status message. The airplane must also be dispatched using MEL Item 21-26-02.

MAINTENANCE (M)

Deactivate lavatory/galley flow and temperature sensor and, if desired, remove filter (AMM DDG 21-26-03).

1. Using a flight deck multi-function display only, open the LAV GALLEY FLOW DET circuit breaker and lock with an INOP tag.

   Note: LAVATORY/GALLEY FLOW DET status message will be displayed. The airplane must also be dispatched using MEL Item 21-26-02.

2. If desired, a dirty or clogged filter may be removed:

   A. Open the following circuit breakers and lock with an DO NOT CLOSE tag:
      - MC LAV GALLEY FAN 1
      - MC LAV GALLEY FAN 2
      - LAV GALLEY FAN 1
      - LAV GALLEY FAN 2

   B. Gain access to lav/galley filter.

   C. Remove filter.

   D. Close the following circuit breakers:
      - MC LAV GALLEY FAN 1
      - MC LAV GALLEY FAN 2
      - LAV GALLEY FAN 1
      - LAV GALLEY FAN 2

21-27-01 Forward EE Cooling Supply Barrier Filter

Interval	Installed	Required	Procedure
C	1	0	**(M) (P)**

May be inoperative provided:
a. Filter is removed.

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MAINTENANCE (M)

Remove the forward equipment cooling air filter (AMM DDG 21-27-01).
1. Gain access to the forward equipment cooling filter.
2. Remove forward equipment cooling air filter.

21-27-02 Forward EE Cooling Exhaust Fan

21-27-02-01 Forward EE Cooling Exhaust Fan

Interval	Installed	Required	Procedure
C	1	0	**(M) (O) (P) (MV)**

May be inoperative provided:
a. Fan is deactivated.
b. Flight is conducted pressurized.
c. Forward equipment cooling supply fan smoke detector operates normally.
d. For ground operations at OAT 30 degrees C or higher, both packs are selected on or conditioned air is supplied to the airplane.
e. Forward cargo heat remains OFF.

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MAINTENANCE (M)

Deactivate forward equipment cooling exhaust fan (AMM DDG 21-27-02).

1. Using a flight deck multi-function display only, open the following circuit breakers and lock with an INOP tag:
    - MC-VENT FAN FWD EQUIP CLG
    - FWD EQUIP CLG EXHAUST FAN
2. For ground operations at OAT 30 degrees C or higher:
    A. Select both packs on or supply conditioned air to the airplane.

OPERATIONS (O)

Note: Forward cargo compartment heat is not available. Temperature sensitive cargo should not be carried in the forward cargo compartment.

1. Flight is conducted pressurized.
2. Set (P5) FWD CARGO TEMP switch OFF.
    Note: The CARGO HEAT FWD advisory message will be displayed.
3. For ground operations at OAT 30 degrees C or higher:
    A. Both packs are selected on or supply conditioned air to the airplane.

21-27-03 Forward EE Cooling Supply Flow/Temperature Sensors

Interval	Installed	Required	Procedure
C	2	1	**(P)**

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21-27-04 Forward EE Cooling Exhaust Overboard Vent Valve

Interval	Installed	Required	Procedure
C	1	0	**(M) (P)**

May be inoperative deactivated open.

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MAINTENANCE (M)

Deactivate the forward equipment cooling exhaust overboard vent valve open (AMM DDG 21-27-04).

1. Using a flight deck multi-function display only, open the following circuit breakers and lock with an INOP tag:
    - OVERBOARD VLV CL-FWD EQUIP CLG
    - OVERBOARD VLV OP-FWD EQUIP CLG
2. Gain access to forward equipment cooling exhaust overboard vent valve.
3. Turn the open/close knob until the forward equipment cooling overboard exhaust valve is fully open.

OPERATIONS NOTE

1. Forward cargo ventilation will be degraded.

UNCONTROLLED IF DOWNLOADED OR PRINTED

21-27-05 Forward EE Cooling Override/Smoke Clearance Valve Motors

Interval	Installed	Required	Procedure
C	2	1	**(M) (P)**

One may be inoperative deactivated.

MAINTENANCE (M)

Deactivate the inoperative override valve motor and confirm that remaining motor operates normally (AMM DDG 21-27-05).

1. For motor 1 inoperative:
   A. Using a flight deck multi-function display only, open the following circuit breakers and lock with an INOP tag:
      - OVRD VLV CMD NORM-FWD EQPT CLG MOT 1
      - OVRD VLV CMD OVRD-FWD EQPT CLG MOT 1
2. For motor 2 inoperative:
   A. Using a flight deck multi-function display only, open the following circuit breakers and lock with an INOP tag:
      - OVRD VLV CMD NORM-FWD EQPT CLG MOT 2
      - OVRD VLV CMD OVRD-FWD EQPT CLG MOT 2
3. Confirm remaining motor operates normally:
   A. Set (P5) EQUIP COOLING FWD switch to OVRD.
   B. Confirm OVRD light illuminates and EQUIP CLG OVRD FWD advisory message displays. (It will take about 8 seconds for valve to move to commanded position.)
   C. Set EQUIP COOLING FWD switch to AUTO.
   D. Confirm OVRD light extinguishes and advisory message clears.

UNCONTROLLED IF DOWNLOADED OR PRINTED

21-27-06 Forward EE Cooling Supply Fans

Interval	Installed	Required	Procedure
C	2	1	**(M) (P) (MV)**

One may be inoperative provided:

a. Forward equipment cooling supply fan is deactivated.
b. Flight is conducted pressurized.

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MAINTENANCE (M)

Deactivate the inoperative forward equipment cooling supply fan (AMM DDG 21-27-06).

1. For fan 1 inoperative:
   A. Using a flight deck multi-function display only, open the following circuit breakers and lock with an INOP tag:
      - MC-SUPPLY FAN 1 FWD EQUIP CLG
      - EQUIP CLG SUPPLY FAN-FWD 1
2. For fan 2 inoperative:
   A. Using a flight deck multi-function display only, open the following circuit breakers and lock with an INOP tag:
      - MC-SUPPLY FAN 2 FWD EQUIP CLG
      - EQUIP CLG SUPPLY FAN-FWD 2

21-27-07 Forward EE Cooling Smoke Detectors

21-27-07-01 Supply Fan Smoke Detector

Interval	Installed	Required	Procedure
C	1	0	**(P)**

May be inoperative provided:

a. Forward equipment cooling exhaust fan operates normally.
b. Forward equipment cooling exhaust fan smoke detector operates normally.

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21-27-07 Forward EE Cooling Smoke Detectors

21-27-07-02 Exhaust Fan Smoke Detector

Interval	Installed	Required	Procedure
C	1	0	**(P)**

May be inoperative provided:

a. Forward equipment cooling supply fan smoke detector operates normally.

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21-27-08 Forward EQUIP COOLING Switch Lights

21-27-08-01 OVRD Light

Interval	Installed	Required	Procedure
C	1	0	**(P)**

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21-27-08 Forward EQUIP COOLING Switch Lights

21-27-08-02 AUTO Light

Interval	Installed	Required	Procedure
C	1	0	**(P)**

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UNCONTROLLED IF DOWNLOADED OR PRINTED

21-27-21 Aft EE Cooling Supply Barrier Filter

Interval	Installed	Required	Procedure
C	1	0	**(M) (P)**

May be inoperative provided:
a. Filter is removed.

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MAINTENANCE (M)

Remove the aft equipment cooling air filter (AMM DDG 21-27-21).
1. Gain access to the aft equipment cooling air filter.
2. Remove equipment cooling air filter.

21-27-22 Aft EE Cooling Exhaust Fan

21-27-22-01 Aft EE Cooling Exhaust Fan

Interval	Installed	Required	Procedure
C	1	0	**(M) (P) (MV)**

May be inoperative provided:

a. Fan is deactivated.
b. Aft equipment cooling supply fan smoke detector operates normally.
c. For ground operations at OAT 30 degrees C or higher, both packs are selected on or conditioned air is supplied to the airplane.
d. Flight is conducted pressurized.

MAINTENANCE (M)

Deactivate aft equipment cooling exhaust fan (AMM DDG 21-27-22).

1. Using a flight deck multi-function display only, open the following circuit breakers and lock with an INOP tag:
    - MC-VENT FAN AFT EQUIP CLG
    - AFT EQUIP CLG EXHAUST FAN
2. For ground operations with OAT equal to or above 30 degrees C:
    A. Select both packs on or supply conditioned air to the airplane.

OPERATIONS NOTE

1. Aft cargo compartment heat is not available. Temperature sensitive cargo should not be carried in the aft cargo compartment.

21-27-23 Aft EE Cooling Flow/Temperature Sensors

Interval	Installed	Required	Procedure
C	2	1	**(P)**

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21-27-24 Aft EE Cooling Overboard Exhaust (Skin Flush) Valve

21-27-24-01 **787-8** **TQA to TQF**

Interval	Installed	Required	Procedure
C	1	0	**(M) (P) (MV)**

May be inoperative provided:

a. Valve is deactivated closed.
b. Aft equipment cooling supply fan smoke detector operates normally.
c. For ground operations at pressure altitudes 8,000 feet or higher, forward and aft outflow valves operate normally.
d. For ground operations at OAT 24 degrees C or higher, aft outflow valve operates normally.
e. For ground operations at OAT 30 degrees C or higher, both packs are selected on or conditioned air is supplied to the airplane.

MAINTENANCE (M)

Deactivate the aft equipment cooling overboard exhaust valve closed (AMM DDG 21-27-24).

1. Using a flight deck multi-function display only, open circuit breaker OVERBOARD VLV-AFT EQUIP CLG and lock with an INOP tag.
2. Gain access to valve open/close socket.
3. Turn the valve to the closed position using a 3/8 inch (10 mm) socket drive.

21-27-24 Aft EE Cooling Overboard Exhaust (Skin Flush) Valve

21-27-24-02 **787-9**

TWA to TWB

Interval	Installed	Required	Procedure
C	1	0	**(M) (P) (MV)**

May be inoperative provided:

a. Valve is deactivated closed.
b. Aft equipment cooling supply fan smoke detector operates normally.
c. Forward and aft outflow valves operate normally.
d. For ground operations at OAT 30 deg. C or higher, both packs are selected on or conditioned air is supplied to the airplane.

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MAINTENANCE (M)

Use MEL Item 21-27-24-01 (M) procedure.

21-27-25 Aft EE Cooling Supply Override/Smoke Clearance Valve Motors

Interval	Installed	Required	Procedure
C	2	1	**(M) (P)**

One may be inoperative deactivated.

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MAINTENANCE (M)

Deactivate the inoperative override valve motor and confirm that remaining motor operates normally (AMM DDG 21-27-25).

1. For motor 1 inoperative:
   A. Using a flight deck multi-function display only, open the following circuit breakers and lock with an INOP tag:
      - OVRD VLV CMD NORM-AFT EQPT CLG MOT 1
      - OVRD VLV CMD OVRD-AFT EQPT CLG MOT 1
2. For motor 2 inoperative:
   A. Using a flight deck multi-function display only, open the following circuit breakers and lock with an INOP tag:
      - OVRD VLV CMD NORM-AFT EQPT CLG MOT 2
      - OVRD VLV CMD OVRD-AFT EQPT CLG MOT 2
3. Confirm remaining motor operates normally:
   A. Set (P5) EQUIP COOLING AFT switch to OVRD.
   B. Confirm OVRD light illuminates and EQUIP CLG OVRD AFT advisory message displays. (It will take about 8 seconds for valve to move to commanded position.)
   C Set EQUIP COOLING AFT switch to AUTO.
   D. Confirm OVRD light extinguishes and advisory message clears.

21-27-26 Aft EE Cooling Supply Fan

Interval	Installed	Required	Procedure
C	2	1	**(M) (P) (MV)**

One may be inoperative provided:

a. Inoperative aft equipment cooling supply fan is deactivated.
b. Flight is conducted pressurized.

MAINTENANCE (M)

Deactivate the inoperative aft equipment cooling supply fan (AMM DDG 21-27-26).

1. For fan 1 inoperative:
   A. Using a flight deck multi-function display only, open the following circuit breakers and lock with an INOP tag:
      - MC-SUPPLY FAN 1 AFT EQUIP CLG
      - EQUIP CLG SUPPLY FAN-AFT 1
2. For fan 2 inoperative:
   A. Using a flight deck multi-function display only, open the following circuit breakers and lock with an INOP tag:
      - MC-SUPPLY FAN 2 AFT EQUIP CLG
      - EQUIP CLG SUPPLY FAN-AFT 2

21-27-27 Aft EE Cooling Smoke Detectors

21-27-27-01 Supply Fan Smoke Detector

Interval	Installed	Required	Procedure
C	1	0	**(P)**

May be inoperative provided:

a. Aft equipment cooling exhaust fan operates normally.
b. Aft equipment cooling exhaust fan smoke detector operates normally.
c. Aft equipment cooling overboard exhaust valve operates normally.
d. Aft cargo heat supply valve operates normally.

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21-27-27 Aft EE Cooling Smoke Detectors

21-27-27-02 Exhaust Fan Smoke Detector

Interval	Installed	Required	Procedure
C	1	0	**(P)**

May be inoperative provided:

a. Aft equipment cooling supply fan smoke detector operates normally.

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21-27-28 Aft Cargo Heat Valve

21-27-28-01 AFT Cargo Heat Valve

Interval	Installed	Required	Procedure
C	1	0	**(M) (P) (MV)**

May be inoperative provided:

a. Valve is deactivated closed.

b. Aft equipment cooling supply fan smoke detector operates normally.

c. For ground operations at OAT 30 degrees C or higher, both packs are selected on or conditioned air is supplied to the airplane.

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MAINTENANCE (M)

Deactivate the aft cargo heat valve closed (AMM DDG 21-27-28).

1. Using a flight deck multi-function display only, open the following circuit breakers and lock with an INOP tag:
    - AFT CARGO HEAT VLV OPEN
    - AFT CARGO HEAT VLV CLOSE
2. Gain access to aft cargo heat valve.
3. Turn the open/close knob until the valve is fully closed.

OPERATIONS NOTE

1. Aft cargo compartment heat is not available. Temperature sensitive cargo should not be carried in the aft cargo compartment.

21-27-29 Aft EQUIP COOLING Switch Lights

21-27-29-01 OVRD Light

Interval	Installed	Required	Procedure
C	1	0	**(P)**

21-27-29 Aft EQUIP COOLING Switch Lights

21-27-29-02 AUTO Light

Interval	Installed	Required	Procedure
C	1	0	**(P)**

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21-27-31 Miscellaneous EE Cooling Exhaust Fan (787-8) **TQA to TQF**

Interval	Installed	Required	Procedure
C	1	0	**(M) (O) (P) (MV)**

May be inoperative provided:
a. Fan is deactivated.
b. Cabin equipment center is deactivated.

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MAINTENANCE (M)

Deactivate the miscellaneous equipment cooling exhaust fan and the cabin equipment center (AMM DDG 21-27-31).

1. Deactivate the miscellaneous equipment cooling fan.
   A. Using a flight deck multi-function display only, open the following circuit breakers and lock with an INOP tag:
      - MC-MISC EQUIP CLG FAN
      - MISC EQUIP CLG FAN
2. Deactivate the cabin equipment center.

OPERATIONS (O)

1. Cabin crew should perform passenger briefings instead of the inflight entertainment system.

21-27-32 Miscellaneous EE Cooling Exhaust Fan Smoke Detector (787-8)

TQA to TQF

Interval	Installed	Required	Procedure
C	1	0	**(P)**

May be inoperative provided:

a. Miscellaneous equipment cooling exhaust fan is considered inoperative.

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Note: The airplane must also be dispatched using MEL Item 21-27-31.

21-29-01 Overhead Flight Crew Rest (OFCR) Supply Shutoff and Smoke Clearance/Exhaust Valves

21-29-01A Alternate Procedures Used

Interval	Installed	Required	Procedure
C	2	0	**(M) (O) (P) (MV)**

May be inoperative provided:

a. Supply shutoff valve is deactivated closed.
b. Exhaust valve is deactivated closed.
c. OFCR is deactivated closed.

Note: These provisions are not intended to prohibit OFCR inspections by crew members.

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MAINTENANCE (M)

Deactivate the OFCR supply shutoff valve closed, exhaust valve closed and OFCR closed (AMM DDG 21-29-01).

1. Deactivate the OFCR supply shutoff and exhaust valves.
   A. Using a flight deck multi-function display only, open the following circuit breakers and lock with an INOP tag:
      - EXHAUST SOV CLOSE-FLT CREW REST
      - EXHAUST SOV OPEN-FLT CREW REST
      - SUPPLY SOV CLOSE-FLT CREW REST
      - SUPPLY SOV OPEN-FLT CREW REST

   B. Gain access to the crew rest supply shutoff and exhaust valves.
   C. Turn the manual open/close knob until the OFCR supply shutoff valve is closed.
   D. Turn the manual open/close knob until the OFCR exhaust valve is closed.
2. Deactivate OFCR closed.
   A. Remove all baggage and personal items from the OFCR.

      Note: Blankets, pillows and other items normally used in the crew rest may remain.

   B. Close the OFCR entrance door.

OPERATIONS (O)

1. The OFCR is not available for inflight use. Remove personal items and do not enter except for inspections by crew members.

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21-29-01 Overhead Flight Crew Rest (OFCR) Supply Shutoff and Smoke Clearance/Exhaust Valves

21-29-01B Procedures Do Not Require Its Use

Interval	Installed	Required	Procedure
C	2	0	**(M) (O) (P) (MV)**

May be inoperative provided:

a. Supply shutoff valve is deactivated closed.
b. Exhaust valve is deactivated closed.
c. OFCR is deactivated closed.
d. Procedures do not require its use.

Note: These provisions are not intended to prohibit OFCR inspections by crew members.

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MAINTENANCE (M)

Deactivate the OFCR supply shutoff valve closed, exhaust valve closed and OFCR closed (AMM DDG 21-29-01).

1. Deactivate the OFCR supply shutoff and exhaust valves.
   A. Using a flight deck multi-function display only, open the following circuit breakers and lock with an INOP tag:
      - EXHAUST SOV CLOSE-FLT CREW REST
      - EXHAUST SOV OPEN-FLT CREW REST
      - SUPPLY SOV CLOSE-FLT CREW REST
      - SUPPLY SOV OPEN-FLT CREW REST
   B. Gain access to the crew rest supply shutoff and exhaust valves.
   C. Turn the manual open/close knob until the OFCR supply shutoff valve is closed.
   D. Turn the manual open/close knob until the OFCR exhaust valve is closed.
2. Deactivate OFCR closed.
   A. Remove all baggage and personal items from the OFCR.

      Note: Blankets, pillows and other items normally used in the crew rest may remain.
   B. Close the OFCR entrance door.

OPERATIONS (O)

1. The OFCR is not available for inflight use. Remove personal items and do not enter except for inspections by crew members.

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21-29-02 Overhead Flight Attendant Rest (OFAR) Supply Shutoff and Smoke Clearance/Exhaust Valves

21-29-02A Alternate Procedures Used

Interval	Installed	Required	Procedure
C	2	0	**(M) (O) (P) (MV)**

May be inoperative provided:
a. Supply shutoff valve is deactivated closed.
b. Exhaust valve is deactivated closed.
c. OFAR is deactivated closed.

Note: These provisions are not intended to prohibit OFAR inspections by crew members.

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MAINTENANCE (M)

Deactivate the OFAR supply shutoff valve closed, exhaust valve closed and OFAR closed (AMM DDG 21-29-02).

1. Deactivate the OFAR supply shutoff and exhaust valves.
   A. Using a flight deck multi-function display only, open the following circuit breakers and lock with an INOP tag:
      - EXHAUST SOV CLOSE-ATTEND CREW REST
      - EXHAUST SOV OPEN-ATTEND CREW REST
      - SUPPLY SOV CLOSE-ATTEND CREW REST
      - SUPPLY SOV OPEN-ATTEND CREW REST
   B. Gain access to the crew rest supply shutoff and exhaust valves.
   C. Turn the manual open/close knob until the OFAR supply shutoff valve is closed
   D. Turn the manual open/close knob until the OFAR exhaust valve is closed.
2. Deactivate OFAR closed.
   A. Remove all baggage and personal items from the OFAR.
      Note: Blankets, pillows and other items normally used in the crew rest may remain.
   B. Close the OFAR entrance door.

OPERATIONS (O)

1. The associated OFAR is not available for inflight use. Remove personal items and do not enter except for inspections by crew members.

21-29-02 Overhead Flight Attendant Rest (OFAR) Supply Shutoff and Smoke Clearance/Exhaust Valves

21-29-02B Procedures Do Not Require Its Use

Interval	Installed	Required	Procedure
D	2	0	**(M) (O) (P) (MV)**

May be inoperative provided:

a. Supply shutoff valve is deactivated closed.
b. Exhaust valve is deactivated closed.
c. OFAR is deactivated closed.
d. Procedures do not require its use.

Note: These provisions are not intended to prohibit OFAR inspections by crew members.

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MAINTENANCE (M)

Deactivate the OFAR supply shutoff valve closed, exhaust valve closed and OFAR closed (AMM DDG 21-29-02).

1. Deactivate the OFAR supply shutoff and exhaust valves.
    A. Using a flight deck multi-function display only, open the following circuit breakers and lock with an INOP tag:
        - EXHAUST SOV CLOSE-ATTEND CREW REST
        - EXHAUST SOV OPEN-ATTEND CREW REST
        - SUPPLY SOV CLOSE-ATTEND CREW REST
        - SUPPLY SOV OPEN-ATTEND CREW REST
    B. Gain access to the crew rest supply shutoff and exhaust valves.
    C. Turn the manual open/close knob until the OFAR supply shutoff valve is closed
    D. Turn the manual open/close knob until the OFAR exhaust valve is closed.
2. Deactivate OFAR closed.
    A. Remove all baggage and personal items from the OFAR.
        Note: Blankets, pillows and other items normally used in the crew rest may remain.
    B. Close the OFAR entrance door.

OPERATIONS (O)

1. The associated OFAR is not available for inflight use. Remove personal items and do not enter except for inspections by crew members.

21-31-01 Automatic Cabin Pressure Control Channels

21-31-01A Pressurized Flight

Interval	Installed	Required	Procedure
C	4	2	**(M) (P)**

One control channel in each valve control unit may be inoperative provided:

a. Manual cabin pressure control is verified to operate normally on both outflow valves before each departure.

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MAINTENANCE (M)

Verify manual cabin pressure control operates normally on both outflow valves (AMM DDG 21-31-01).

1. For 787-8 **TQA to TQF**
   - A. Set the Pressurization Panel (P5) FWD OUTFLOW VALVE and AFT OUTFLOW VALVE switches to MAN.
   - B. Hold both manual switches CLOSE until the EICAS outflow valve position indicator reads CL, or if EICAS indication is not available hold the switches CLOSE for 30 seconds and confirm the forward and aft outflow valve doors are closed.
   - C. Hold both manual switches OPEN until the EICAS outflow valve position indicator reads OP, or if EICAS indication is not available hold the switches OPEN for 30 seconds and confirm the forward and aft outflow valve doors are full open.
   - D. Set the Pressurization Panel (P5) FWD OUTFLOW VALVE and AFT OUTFLOW VALVE switches to AUTO.
2. For 787-9 **TWA to TWB**
   - A. Set the Pressurization Panel (P5) FWD OUTFLOW VALVE and AFT OUTFLOW VALVE switches to MAN.
   - B. Hold both manual switches CLOSE until the EICAS outflow valve position indicator reads CL and confirm the forward and aft outflow valve doors are closed.
   - C. Hold both manual switches OPEN until the EICAS outflow valve position indicator is in the 1 o’clock position and confirm the forward and aft outflow valve doors are full open.
   - D. Set the Pressurization Panel (P5) FWD OUTFLOW VALVE and AFT OUTFLOW VALVE switches to AUTO.

21-31-01 Automatic Cabin Pressure Control Channels

21-31-01B Unpressurized Flight

Interval	Installed	Required	Procedure
C	4	0	**(M) (O) (P) (MV)**

May be inoperative provided:

a. For extended overwater flight, manual cabin pressure control is verified to operate normally on both outflow valves.

b. Cargo compartments must remain empty, except for ballast, empty cargo containers (ballast may be loaded in ULDs), fly away kits, pallets, and cargo restraint components.

c. Flight is conducted unpressurized.

Note: 1. Landing gear tires, cans of hydraulic oil, cleaning solvents, or any item(s) that may be potential sources of smoke, fume, or fire must be removed from Airborne Maintenance Kit (AMK).

2. Dry shingle, coarse round gravel or pebbles can be used as ballast.

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MAINTENANCE (M)

Establish airplane in unpressurized flight configuration, and for extended overwater flight, verify manual cabin pressure control operates normally on both outflow valves (AMM DDG 21-31-01).

1. For 787-8 **TQA to TQF**
   - A. For extended overwater flight with manual pressurization control operational:
     - 1) Set the Pressurization Panel (P5) FWD OUTFLOW VALVE and AFT OUTFLOW VALVE switches to MAN.
     - 2) Hold both manual switches CLOSE until the EICAS outflow valve position indicator reads CL, or if EICAS indication is not available hold the switches CLOSE for 30 seconds and confirm the forward and aft outflow valve doors are closed.
     - 3) Hold both manual switches OPEN until the EICAS outflow valve position indicator reads OP, or if EICAS indication is not available hold the switches OPEN for 30 seconds and confirm the forward and aft outflow valve doors are full open.
     - 4) Leave the Pressurization Panel (P5) FWD OUTFLOW VALVE and AFT OUTFLOW VALVE switches in MAN.
   - B. For manual pressure control inoperative (extended overwater flight prohibited):
     - 1) Remove the associated outflow valve.
   - C. Deactivate the forward and aft lower cargo compartment smoke detection system.
     - 1) For forward lower cargo compartment smoke detection system:
       - a. Using a flight deck multi-function display only, open the following circuit breakers and lock with an INOP tag:
         - SMOKE DETECTOR-FWD CARGO 1A
         - SMOKE DETECTOR-FWD CARGO 1B
         - SMOKE DETECTOR-FWD CARGO 2A
         - SMOKE DETECTOR-FWD CARGO 2B

2) For aft lower cargo compartment smoke detection system:
   a. Using a flight deck multi-function display only, open the following circuit breakers and lock with an INOP tag:
      - SMOKE DETECTOR-AFT CARGO 1A
      - SMOKE DETECTOR-AFT CARGO 1B
      - SMOKE DETECTOR-AFT CARGO 2A
      - SMOKE DETECTOR-AFT CARGO 2B

   Note: The DET FIRE CARGO FWD and DET FIRE CARGO AFT advisory messages, and the status messages, for all cargo fire detectors will be displayed.

D. For OFCR or OFAR installed:
1) Deactivate the crew/attendant rest(s) closed.
   a. Remove all baggage and personal items from the associated crew/attendant rest.

   Note: Blankets, pillows and other items normally used in the crew rest may remain.

   b. Close the associated crew/attendant rest entrance door.

2. For 787-9 **TWA to TWB**

A. For extended overwater flight with manual pressurization control operational:
1) Set the Pressurization Panel (P5) FWD OUTFLOW VALVE and AFT OUTFLOW VALVE switches to MAN.
2) Hold both manual switches CLOSE until the EICAS outflow valve position indicator reads CL and confirm the forward and aft outflow valve doors are closed.
3) Hold both manual switches OPEN until the EICAS outflow valve position indicator is in the 1 o'clock position and confirm the forward and aft outflow valve doors are full open.
4) Leave the Pressurization Panel (P5) FWD OUTFLOW VALVE and AFT OUTFLOW VALVE switches in MAN.

B. For manual pressure control inoperative (extended overwater flight prohibited):
1) Remove the associated outflow valve.

C. Deactivate the forward and aft lower cargo compartment smoke detection system.
1) For forward lower cargo compartment smoke detection system:
   a. Using a flight deck multi-function display only, open the following circuit breakers and lock with an INOP tag:
      - SMOKE DETECTOR-FWD CARGO 1A
      - SMOKE DETECTOR-FWD CARGO 1B
      - SMOKE DETECTOR-FWD CARGO 2A
      - SMOKE DETECTOR-FWD CARGO 2B

2) For aft lower cargo compartment smoke detection system:
    a. Using a flight deck multi-function display only, open the following circuit breakers and lock with an INOP tag:
        - SMOKE DETECTOR-AFT CARGO 1A
        - SMOKE DETECTOR-AFT CARGO 1B
        - SMOKE DETECTOR-AFT CARGO 2A
        - SMOKE DETECTOR-AFT CARGO 2B

    Note: The DET FIRE CARGO FWD and DET FIRE CARGO AFT advisory messages, and the status messages, for all cargo fire detectors will be displayed.

D. Deactivate the crew/attendant rest(s) closed.
    1) Remove all baggage and personal items from the associated crew/attendant rest.

    Note: Blankets, pillows and other items normally used in the crew rest may remain.

    2) Close the associated crew/attendant rest entrance door.

OPERATIONS (O)

Note: 1. The CABIN ALTITUDE AUTO caution message will be displayed.
2. The DET FIRE CARGO FWD and DET FIRE CARGO AFT advisory messages will be displayed.

1. Flight is conducted unpressurized.
2. Cargo compartments must remain empty, except for ballast, empty cargo containers (ballast may be loaded in ULDs), fly away kits, pallets, and cargo restraint components.
3. For flight with passengers:
    A. Limit enroute altitude to 10,000 feet.
    B. To avoid passenger discomfort, limit climb (after takeoff obstacle clearance has been assured) and descent rates to 500 fpm.
4. For OFCR or OFAR installed:
    A. The crew rest areas are not available for inflight use. Remove personal items and do not enter except for inspections by crew members.

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21-31-02 Manual Cabin Pressure Outflow Valve Controls (FWD and AFT)

21-31-02A Extended Overwater Flight Prohibited

Interval	Installed	Required	Procedure
C	2	1	**(P) (MV)**

One may be inoperative provided:

a. Automatic cabin pressure control channels on associated valve control unit operate normally.
b. Extended overwater flight is prohibited.

21-31-02 Manual Cabin Pressure Outflow Valve Controls (FWD and AFT)

21-31-02B Outflow Valve Considered Inoperative

Interval	Installed	Required	Procedure
C	2	0	**(P)**

May be inoperative provided:

a. Associated outflow valve is considered inoperative.

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Note: The airplane must be dispatched using MEL Item 21-31-03, 21-31-03-01 or 21-31-03-02, as appropriate.

21-31-03 Forward and Aft Outflow Valves

Interval	Installed	Required	Procedure
C	2	0	**(M) (O) (P) (MV)**

May be inoperative provided:

a. Cargo compartments must remain empty, except for ballast, empty cargo containers (ballast may be loaded in ULDs), fly away kits, pallets, and cargo restraint components.
b. Flight is conducted unpressurized.
c. Extended overwater flight is prohibited.

Note:
1. Landing gear tires, cans of hydraulic oil, cleaning solvents, or any item(s) that may be potential sources of smoke, fume, or fire must be removed from Airborne Maintenance Kit (AMK).
2. Dry shingle, coarse round gravel or pebbles can be used as ballast.

MAINTENANCE (M)

1. Use MEL Item 21-31-01B (M) procedure.

OPERATIONS (O)

1. Use MEL Item 21-31-01B (O) procedure.

21-31-03 Forward and Aft Outflow Valves

21-31-03-01 **787-8** **TQA to TQF**

21-31-03-01-01 **Forward Outflow Valve**

Interval	Installed	Required	Procedure
C	1	0	**(M) (O) (P)**

One may be inoperative provided:

a. Forward outflow valve is locked in the fixed cruise position.
b. Manual cabin pressure control is verified to operate normally on aft outflow valve.
c. Aft outflow valve operates normally.
d. Air conditioning packs operate normally.
e. Verify at least three cabin air compressors operate normally before each departure.
f. For ground operations at pressure altitudes 8,000 feet or higher, aft EE cooling overboard exhaust (skin flush) valve operates normally.
g. For ground operations with forward outflow valve inoperative and OAT 24 degrees C or higher, both packs are selected on or conditioned air is supplied to the airplane.

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MAINTENANCE (M)

Note: 1. For an air conditioning pack to be operating normally, certain items associated with that system must operate normally. See MEL Item 21-51-01 for a list of those items.
2. For a cabin air compressor to be operating normally, certain items must operate normally. See MEL Item 21-52-01 for a list of those items.

Verify at least three CAC's operate normally before each departure, lock forward outflow valve in the fixed cruise position and verify manual cabin pressure control operates normally on aft outflow valve (AMM DDG 21-31-03).

1. Verify that both CAC's operate normally on one pack, and at least one CAC operates normally on the other pack before each departure.
   A. Power the airplane using the APU.
   B. Set one pack OFF and the other pack ON.
   C. On AIR CONDITIONING maintenance page 1, confirm status that both CABIN AIR COMP indicate ON for the operating pack.
   D. Set the OFF pack to ON, and the ON pack to OFF.
   E. On AIR CONDITIONING maintenance page 1, confirm status that at least one CABIN AIR COMP indicates ON for the operating pack.
2. Lock forward outflow valve in the fixed cruise position:
   A. Using a flight deck multi-function display only, open the following circuit breakers and lock with an INOP tag:
      - VALVE CTRL UNIT-FWD R
      - VALVE CTRL UNIT-FWD L

B. Open the following circuit breakers and lock with a DO NOT CLOSE tag:
  - MC-VENT FAN FWD EQUIP CLG
  - FWD EQUIP CLG EXHAUST FAN

C. Open and collar P300 panel circuit breaker MAN OFV FWD.

D. Deactivate RDC #11.
  1) Open and collar P300 panel circuit breaker RDC-FLT DK L PRI.
  2) Open circuit breaker RDC-FLT DK L SEC and lock with an DO NOT CLOSE tag.

E. Gain access to the forward outflow valve.

F. Disconnect cap and stow the electrical connectors to the following outflow valve components:
  1) Manual outflow valve motor (J5).
  2) Manual outflow valve potentiometer (J1).

G. Manually lock the outflow valve in the fixed cruise position.
  1) Disengage the primary pushrod from the actuator output crank.
  2) Attach the primary pushrod to the outflow valve frame.

H. Activate RDC #11.
  1) Close P300 panel circuit breaker RDC-FLT DK L PRI.
  2) Close circuit breaker RDC-FLT DK L SEC.

I. Close the following circuit breakers:
  - MC-VENT FAN FWD EQUIP CLG
  - FWD EQUIP CLG EXHAUST FAN

3. Verify manual cabin pressure control operates normally on aft outflow valve.
  A. Set the aft OUTFLOW VALVE switch on the Pressurization Panel (P5) to MAN.
  B. Hold the aft OUTFLOW VALVE MANUAL switch CLOSE until the EICAS outflow valve position indicator is CL, or if EICAS indication is not available hold the switch CLOSE for 30 seconds and confirm the outflow valve door is closed.
  C. Hold the aft OUTFLOW VALVE MANUAL switch OPEN until the EICAS outflow valve position indicator is OP, or if EICAS indication is not available hold the switch OPEN for 30 seconds and confirm the outflow valve door is open.
  D. Set the aft OUTFLOW VALVE switch on the Pressurization Panel (P5) to AUTO.

OPERATIONS (O)

1. The OUTFLOW VALVE FWD advisory message will be displayed.

21-31-03 **Forward and Aft Outflow Valves**
21-31-03-01 **787-8**

TQA to TQF

21-31-03-01-03 **Aft Outflow Valve**

Interval	Installed	Required	Procedure
C	1	0	**(M) (O) (P)**

One may be inoperative provided:

a. Aft outflow valve is locked in the fixed cruise position.
b. Crew rest areas are deactivated closed.
c. Manual cabin pressure control is verified to operate normally on forward outflow valve.
d. Forward outflow valve operates normally.
e. Air conditioning packs operate normally.
f. Verify at least three cabin air compressors operate normally before each departure.
g. For ground operations at pressure altitudes 8,000 feet or higher, aft EE cooling overboard exhaust (skin flush) valve operates normally.
h. For ground operations at OAT 24 deg. C or higher, both packs are selected on or conditioned air is supplied to the airplane.

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MAINTENANCE (M)

Note: 1. For an air conditioning pack to be operating normally, certain items associated with that system must operate normally See MEL Item 21-51-01 for a list of those items.
2. For a cabin air compressor to be operating normally, certain items must operate normally. See MEL Item 21-52-01 for a list of those items.

Verify at least three CAC’s operate normally before each departure, lock aft outflow valve in the fixed cruise position and verify manual cabin pressure control operates normally on forward outflow valve (AMM DDG 21-31-03).

1. Verify that both CAC's operate normally on one pack, and at least one CAC operates normally on the other pack before each departure.
   A. Power the airplane using the APU.
   B. Set one pack OFF and the other pack ON.
   C. On AIR CONDITIONING maintenance page 1, confirm status that both CABIN AIR COMP indicate ON for the operating pack.
   D. Set the OFF pack to ON, and the ON pack to OFF.
   E. On AIR CONDITIONING maintenance page 1, confirm status that at least one CABIN AIR COMP indicates ON for the operating pack.
2. Lock aft outflow valve in the fixed cruise position:
   A. Using a flight deck multi-function display only, open the following circuit breakers and lock with an INOP tag:
      - VALVE CTRL UNIT-AFT R
      - VALVE CTRL UNIT-AFT L

B. Open the following circuit breakers and lock with a DO NOT CLOSE tag:
  - MC-LAV GALLEY FAN 1
  - MC-LAV GALLEY FAN 2
  - LAV GALLEY FAN 1
  - LAV GALLEY FAN 2

C. Open and collar P400 panel circuit breaker MAN OFV AFT.
D. Deactivate RDC #10.
  1) Open and collar P400 panel circuit breaker RDC-CROWN DR 3 R PRI.
  2) Open circuit breaker RDC-CROWN DR 3 R SEC and lock with an DO NOT CLOSE tag.
E. Gain access to the aft outflow valve.
F. Disconnect cap and stow the electrical connectors to the following outflow valve components:
  1) Manual outflow valve motor (J5).
  2) Manual outflow valve potentiometer (J1).
G. Manually lock the outflow valve in the fixed cruise position.
  1) Disengage the primary pushrod from the actuator output crank.
  2) Attach the primary pushrod to the outflow valve frame.
H. Activate RDC #10.
  1) Close P400 panel circuit breaker RDC-CROWN DR 3 R PRI.
  2) Close circuit breaker RDC-CROWN DR 3 R SEC.
I. Close the following circuit breakers:
  - MC-LAV GALLEY FAN 1
  - MC-LAV GALLEY FAN 2
  - LAV GALLEY FAN 1
  - LAV GALLEY FAN 23

3. Verify manual cabin pressure control operates normally on forward outflow valve.
  A. Set the forward OUTFLOW VALVE switch on the Pressurization Panel (P5) to MAN.
  B. Hold the forward OUTFLOW VALVE MANUAL switch CLOSE until the EICAS outflow valve position indicator is CL, or if EICAS indication is not available hold the switch CLOSE for 30 seconds and confirm the outflow valve door is closed.
  C. Hold the forward OUTFLOW VALVE MANUAL switch OPEN until the EICAS outflow valve position indicator is OP, or if EICAS indication is not available hold the switch OPEN for 30 seconds and confirm the outflow valve door is open.
  D. Set the forward OUTFLOW VALVE switch on the Pressurization Panel (P5) to AUTO.
4. Remove all baggage and personal items from the OFCR or OFAR.

   Note: Blankets, pillows and other items normally used in the crew rest may remain.
5. Close the OFCR or OFAR entrance door.

OPERATIONS (O)

1. The OUTFLOW VALVE AFT advisory message will be displayed.
2. The crew rest areas are not available for inflight use. Remove personal items and do not enter except for inspections by crew members.

21-31-03 Forward and Aft Outflow Valves

21-31-03-02 787-9

TWA to TWB

21-31-03-02-01 Forward Outflow Valve

Interval	Installed	Required	Procedure
C	1	0	**(M) (O) (P)**

One may be inoperative provided:

a. Forward outflow valve is locked in the fixed cruise position.
b. Manual cabin pressure control is verified to operate normally on aft outflow valve.
c. Passenger entry door vent door springs are verified to operate normally.
d. Aft outflow valve operates normally.
e. Air conditioning packs operate normally.
f. Verify at least three cabin air compressors operate normally before each departure.
g. Aft EE cooling overboard exhaust (skin flush) valve operates normally.
h. For ground operations with forward outflow valve inoperative and OAT 24 deg. C or higher, both packs are selected on or conditioned air is supplied to the airplane.

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MAINTENANCE (M)

Note: 1. For an air conditioning pack to be operating normally, certain items associated with that system must operate normally. See MEL Item 21-51-01 for a list of those items.
2. For a cabin air compressor to be operating normally, certain items must operate normally. See MEL Item 21-52-01 for a list of those items.

Verify at least three CAC's operate normally before each departure, lock forward outflow valve in the fixed cruise position, verify manual cabin pressure control operates normally on aft outflow valve, and verify passenger entry door vent door springs operate normally (AMM DDG 21-31-03).

1. Verify that both CAC's operate normally on one pack, and at least one CAC operates normally on the other pack before each departure.
   A. Power the airplane using the APU.
   B. Set one pack OFF and the other pack ON.
   C. On AIR CONDITIONING maintenance page 1, confirm status that both CABIN AIR COMP indicate ON for the operating pack.
   D. Set the OFF pack to ON, and the ON pack to OFF.
   E. On AIR CONDITIONING maintenance page 1, confirm status that at least one CABIN AIR COMP indicates ON for the operating pack.
2. Lock forward outflow valve in the fixed cruise position:
   A. Using a flight deck multi-function display only, open the following circuit breakers and lock with an INOP tag:
      - VALVE CTRL UNIT-FWD R
      - VALVE CTRL UNIT-FWD L

B. Open the following circuit breakers and lock with a DO NOT CLOSE tag:
   - MC-VENT FAN FWD EQUIP CLG
   - FWD EQUIP CLG EXHAUST FANS

C. Open and collar P300 panel circuit breaker MAN OFV FWD.
D. Deactivate RDC #11.
   1) Open and collar P300 panel circuit breaker RDC-FLT DK L PRI.
   2) Open circuit breaker RDC-FLT DK L SEC and lock with an DO NOT CLOSE tag.

E. Gain access to the forward outflow valve.
F. Disconnect cap and stow the electrical connectors to the following outflow valve components:
   1) Manual outflow valve motor (J5).
   2) Manual outflow valve potentiometer (J1).

G. Manually lock the forward outflow valve in the fixed cruise position.
   1) Disengage the primary pushrod from the actuator output crank.
   2) Attach the primary pushrod to the outflow valve frame.

H. Activate RDC #11.
   1) Close P300 panel circuit breaker RDC-FLT DK L PRI.
   2) Close circuit breaker RDC-FLT DK L SEC.

I. Close the following circuit breakers:
   - MC-VENT FAN FWD EQUIP CLG
   - FWD EQUIP CLG EXHAUST FAN

3. Verify manual cabin pressure control operates normally on aft outflow valve.
   A. Set aft OUTFLOW VALVE switch on the Pressurization Panel (P5) to MAN.
   B. Hold aft OUTFLOW VALVE MANUAL switch CLOSE until EICAS outflow valve position indicator is CL and confirm the outflow valve door is closed.
   C. Hold aft OUTFLOW VALVE MANUAL switch OPEN until EICAS outflow valve position indicator is in the 1 o’clock position and confirm the outflow valve door is open.
   D. Set the aft OUTFLOW VALVE switch on the Pressurization Panel (P5) to AUTO.
4. Verify passenger entry door vent door springs operate normally.
   A. Gain access to exterior of each passenger entry door.
   B. If door is closed, latched and locked (vent door closed), pull out the external handle and rotate approximately 30 deg in the open direction to open the vent door. Release handle.
   C. Visually verify that the free ends of each of the two springs common to the vent door are in contact with their corresponding spring stops.
   D. Visually verify there are no failures in the spring coils.
   E. Close/Latch and Lock the door.

OPERATIONS (O)

The OUTFLOW VALVE FWD advisory message will be displayed.

During ground operation with one outflow valve locked in the fixed cruise position, shutdown one air conditioning pack before opening the passenger door. After the first passenger entry door is opened, set air conditioning packs as desired.

21-31-03 **Forward and Aft Outflow Valves**
21-31-03-02 **787-9** **TWA to TWB**

21-31-03-02-03 **Aft Outflow Valve**

Interval	Installed	Required	Procedure
C	1	0	**(M) (O) (P)**

One may be inoperative provided:

a. Aft outflow valve is locked in the fixed cruise position.
b. Crew rest areas are deactivated closed.
c. Manual cabin pressure control is verified to operate normally on forward outflow valve.
d. Passenger entry door vent door springs are verified to operate normally.
e. Forward outflow valve operates normally.
f. Air conditioning packs operate normally.
g. Verify at least three cabin air compressors operate normally before each departure.
h. Aft EE cooling overboard exhaust (skin flush) valve operates normally
i. For ground operations at OAT 24 deg. C or higher, both packs are selected on or conditioned air is supplied to the airplane.

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MAINTENANCE (M)

Note: 1. For an air conditioning pack to be operating normally, certain items associated with that system must operate normally. See MEL Item 21-51-01 for a list of those items.
2. For a cabin air compressor to be operating normally, certain items must operate normally. See MEL Item 21-52-01 for a list of those items.

Verify at least three CAC’s operate normally before each departure, lock aft outflow valve in the fixed cruise position, verify manual cabin pressure control operates normally on forward outflow valve, and verify passenger entry door vent door springs operate normally (AMM DDG 21-31-03).

1. Verify that both CAC's operate normally on one pack, and at least one CAC operates normally on the other pack before each departure.
   A. Power the airplane using the APU.
   B. Set one pack OFF and the other pack ON.
   C. On AIR CONDITIONING maintenance page 1, confirm status that both CABIN AIR COMP indicate ON for the operating pack.
   D. Set the OFF pack to ON, and the ON pack to OFF.
   E. On AIR CONDITIONING maintenance page 1, confirm status that at least one CABIN AIR COMP indicates ON for the operating pack.
2. Lock aft outflow valve in the fixed cruise position:
   A. Using a flight deck multi-function display only, open the following circuit breakers and lock with an INOP tag:
      - VALVE CTRL UNIT-AFT R
      - VALVE CTRL UNIT-AFT L

B. Open the following circuit breakers and lock with a DO NOT CLOSE tag:
   - MC-LAV GALLEY FAN 1
   - MC-LAV GALLEY FAN 2
   - LAV GALLEY FAN 1
   - LAV GALLEY FAN 2

C. Deactivate RDC #10.
   1) Open and collar P400 panel circuit breaker RDC-CROWN DR 3 R PRI.
   2) Open circuit breaker RDC-CROWN DR 3 R SEC and lock with an DO NOT CLOSE tag.

D. Open and collar P400 panel circuit breaker MAN OFV AFT.

E Gain access to the aft outflow valve.

F. Disconnect cap and stow the electrical connectors to the following outflow valve components:
   1) Manual outflow valve motor (J5).
   2) Manual outflow valve potentiometer (J1).

G. Manually lock the aft outflow valve in the fixed cruise position.
   1) Disengage the primary pushrod from the actuator output crank.
   2) Attach the primary pushrod to the outflow valve frame.

H. Activate RDC #10.
   1) Close P400 panel circuit breaker RDC-CROWN DR 3 R PRI.
   2) Close circuit breaker RDC-CROWN DR 3 R SEC.

I. Close the following circuit breakers:
   - MC-LAV GALLEY FAN 1
   - MC-LAV GALLEY FAN 2
   - LAV GALLEY FAN 1
   - LAV GALLEY FAN 2

3. Verify manual cabin pressure control operates normally on forward outflow valve.
   A. Set the forward OUTFLOW VALVE switch on the Pressurization Panel (P5) to MAN.
   B. Hold the forward OUTFLOW VALVE MANUAL switch CLOSE until the EICAS outflow valve position indicator is CL and confirm the outflow valve door is closed.
   C. Hold the forward OUTFLOW VALVE MANUAL switch OPEN until the EICAS outflow valve position indicator is in the 1 o'clock position and confirm the outflow valve door is open.
   D. Set the forward OUTFLOW VALVE switch on the Pressurization Panel (P5) to AUTO.

4. Verify passenger entry door vent door springs operate normally.
   A. Gain access to exterior of each passenger entry door.
   B. If the door is closed, latched and locked (vent door closed), pull out the external handle and rotate approximately 30 deg. in the open direction to open the vent door. Release handle.
   C. Visually verify that the free ends of each of the two springs common to the vent door are in contact with their corresponding spring stops.
   D. Visually verify there are no failures in the spring coils.
   E. Close/Latch and Lock the door.

5. Remove all baggage and personal items from the OFCR or OFAR.

   Note: Blankets, pillows and other items normally used in the crew rest may remain.

6. Close the OFCR or OFAR entrance door.

OPERATIONS (O)

The OUTFLOW VALVE AFT advisory message will be displayed.

The crew rest areas are not available for inflight use. Remove personal items and do not enter except for inspections by crew members.

For augmented flight crew operations, flight crew duty periods should be adjusted appropriately (see 14 CFR 117).

During ground operation with one outflow valve locked in the fixed cruise position, shutdown one air conditioning pack before opening the passenger door. After the first passenger entry door is opened, set air conditioning packs as desired.

21-03-03 Forward and Aft Outflow Valves

21-03-03-03 OUTFLOW VALVE Switch MAN Lights

Interval	Installed	Required	Procedure
C	2	0	**(P)**

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UNCONTROLLED IF DOWNLOADED OR PRINTED

21-03-03 Forward and Aft Outflow Valves

21-03-03-04 OUTFLOW VALVE Switch AUTO Lights

Interval	Installed	Required	Procedure
C	2	0	**(P)**

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21-31-04 Remote Sensor Units

Interval	Installed	Required	Procedure
C	2	1	**(M) (P)**

May be inoperative deactivated.

MAINTENANCE (M)

Deactivated inoperative remote sensor unit (AMM DDG 31-31-04).

1. Using a flight deck multi-function display only, open the following circuit breaker and lock with a INOP tag:
    A. For forward remote sensor unit:
        - REMOTE SNSR UNIT-FW
    B. For aft remote sensor unit:
        - REMOTE SNSR UNIT-AFT

21-31-05 Cabin Rate Of Climb Indication

21-31-05A Cabin Pressure Controls Operate Normally

Interval	Installed	Required	Procedure
C	1	0	**(P)**

May be inoperative provided:

a. Automatic cabin pressure control channels operate normally.

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21-31-05 Cabin Rate Of Climb Indication

21-31-05B Unpressurized Flight

Interval	Installed	Required	Procedure
C	1	0	**(M) (O) (P) (MV)**

May be inoperative provided:

a. Flight is conducted unpressurized.

b. Cargo compartments must remain empty, except for ballast, empty cargo containers (ballast may be loaded in ULDs), fly away kits, pallets, and cargo restraint components.

Note:
1. Landing gear tires, cans of hydraulic oil, cleaning solvents, or any item(s) that may be potential sources of smoke, fume, or fire must be removed from Airborne Maintenance Kit (AMK).
2. Dry shingle, coarse round gravel or pebbles can be used as ballast.

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MAINTENANCE (M)

Establish airplane in unpressurized flight configuration (AMM DDG 21-31-05).

1. Use MEL Item 21-31-01B (M) procedure.

OPERATIONS (O)

1. Use MEL Item 21-31-01B (O) procedure.

21-31-06 Cabin Differential Pressure Indication

21-31-06A Cabin Altitude Indication Operates Normally

Interval	Installed	Required	Procedure
C	1	0	**(O) (P)**

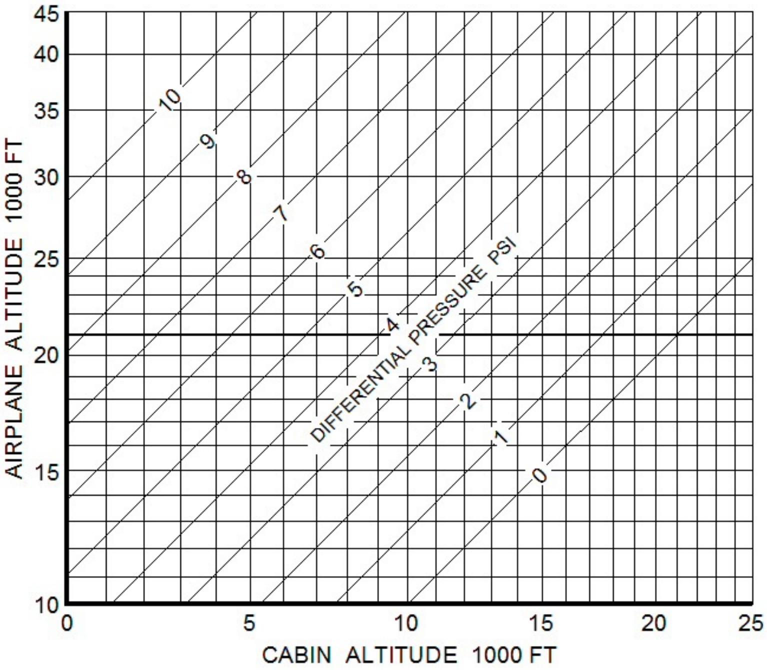
May be inoperative provided:

a. Cabin altitude indication operates normally.

b. A chart is provided to convert cabin altitude to cabin differential pressure.

OPERATIONS (O)

1. Cabin differential pressure may be derived from the following chart using indicated values of airplane altitude and cabin altitude.



21-31-06 Cabin Differential Pressure Indication

21-31-06B Unpressurized Flight

Interval	Installed	Required	Procedure
C	1	0	**(M) (O) (P) (MV)**

May be inoperative provided:

a. Flight is conducted unpressurized.

b. Cargo compartments must remain empty, except for ballast, empty cargo containers (ballast may be loaded in ULDs), fly away kits, pallets, and cargo restraint components.

Note: 1. Landing gear tires, cans of hydraulic oil, cleaning solvents, or any item(s) that may be potential sources of smoke, fume, or fire must be removed from Airborne Maintenance Kit (AMK).

2. Dry shingle, coarse round gravel or pebbles can be used as ballast.

MAINTENANCE (M)

Establish airplane in unpressurized flight configuration (AMM DDG 21-31-06).

1. Use MEL Item 21-31-01B (M) procedure.

OPERATIONS (O)

1. Use MEL Item 21-31-01B (O) procedure.

UNCONTROLLED IF DOWNLOADED OR PRINTED

21-31-07 Cabin Altitude Indication

21-31-07A Differential Pressure Indication Operates Normally

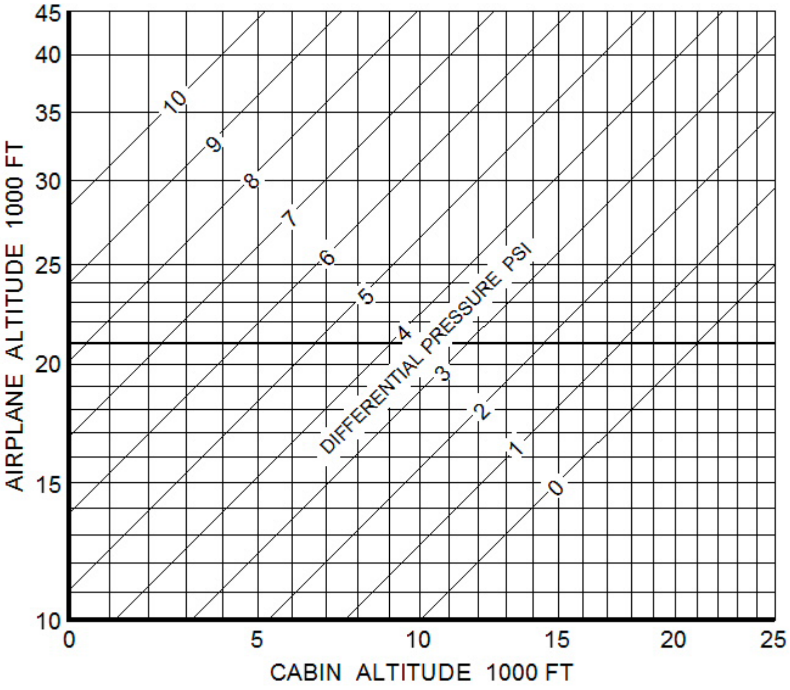
Interval	Installed	Required	Procedure
C	1	0	**(O) (P)**

May be inoperative provided:

a. Cabin differential pressure indication operates normally.
b. A chart is provided to convert cabin differential pressure to cabin altitude.

OPERATIONS (O)

1. Cabin altitude may be derived from the following chart using indicated values of cabin differential pressure and airplane altitude.



21-31-07 Cabin Altitude Indication

21-31-07B Unpressurized Flight

Interval	Installed	Required	Procedure
C	1	0	**(M) (O) (P) (MV)**

May be inoperative provided:

a. Flight is conducted unpressurized.

b. Cargo compartments must remain empty, except for ballast, empty cargo containers (ballast may be loaded in ULDs), fly away kits, pallets, and cargo restraint components.

Note:
1. Landing gear tires, cans of hydraulic oil, cleaning solvents, or any item(s) that may be potential sources of smoke, fume, or fire must be removed from Airborne Maintenance Kit (AMK).
2. Dry shingle, coarse round gravel or pebbles can be used as ballast.

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MAINTENANCE (M)

Establish airplane in unpressurized flight configuration (AMM DDG 21-31-07).

1. Use MEL Item 21-31-01B (M) procedure.

OPERATIONS (O)

1. Use MEL Item 21-31-01B (O) procedure.

21-31-08 Outflow Valve Position Indications (787-8)

TQA to TQF

Interval	Installed	Required	Procedure
C	2	0	**(P)**

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OPERATIONS NOTE

1. To manually position the outflow valve(s) full open or full closed, position the OUTFLOW VALVE Switch to MAN and press and hold the OUTFLOW VALVE MANUAL Switch OPEN or CLOSE for 30 seconds.

21-31-09 Auto Cabin Pressure Control Communication System

Interval	Installed	Required	Procedure
C	1	0	**(P)**

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21-32-01 Positive Pressure Relief Valves

21-32-01A Valve Deactivated

Interval	Installed	Required	Procedure
C	2	1	**(M) (P)**

One may be inoperative deactivated closed.

MAINTENANCE (M)

Deactivate the associated positive pressure relief valve in the closed position (AMM DDG 21-32-01).

1. If flapper doors are open, from outside the airplane press the flapper doors closed.
2. Gain access to the valve on the left side of the forward cargo compartment.
3. Disconnect the remote ambient sense hose from the primary controller.
4. Plug the hose (AS5231T06).
5. Leave the primary controller open (no cap).
6. Disconnect the integral ambient sense tube from the secondary controller.
7. Disconnect the integral ambient sense tube from the ambient sense port.
8. Stow the sense tube.
9. Cap the ambient sense port (BE539-25 using BAC5010, type 60).
10. Leave the secondary controller open (no cap).
11. Remove the top screw (while in aircraft installation position) of the two screw plugs (Nord-Micro P/N 7001372-01) and the sealing washer (Nord-Micro P/N 22475-02) on the side of the secondary controller.
12. Perform the Remote Ambient Sensor and Integral Ambient Sensor tests on the operating valve and confirm the operating valve operates normally.
13. Perform the Remote Ambient Sensor and Integral Ambient Sensor tests on the deactivated valve and confirm the deactivated valve does not activate.

21-32-01 **Positive Pressure Relief Valves**

21-32-01B **Unpressurized Flight**

Interval	Installed	Required	Procedure
C	2	0	**(M) (O) (P) (MV)**

May be inoperative provided:

a. Flight is conducted unpressurized.

b. Cargo compartments must remain empty, except for ballast, empty cargo containers (ballast may be loaded in ULDs), fly away kits, pallets, and cargo restraint components.

Note:
1. Landing gear tires, cans of hydraulic oil, cleaning solvents, or any item(s) that may be potential sources of smoke, fume, or fire must be removed from Airborne Maintenance Kit (AMK).
2. Dry shingle, coarse round gravel or pebbles can be used as ballast.

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MAINTENANCE (M)

Establish airplane in unpressurized flight configuration (AMM DDG 21-32-01).

1. Use MEL Item 21-31-01B (M) procedure.

OPERATIONS (O)

1. Use MEL Item 21-31-01B (O) procedure.

21-32-02 Negative Pressure Relief Valve

Interval	Installed	Required	Procedure
C	4	0	**(M) (O) (P) (MV)**

May be inoperative provided:

a. Flight is conducted unpressurized.

b. Cargo compartments must remain empty, except for ballast, empty cargo containers (ballast may be loaded in ULDs), fly away kits, pallets, and cargo restraint components.

Note: 1. Landing gear tires, cans of hydraulic oil, cleaning solvents, or any item(s) that may be potential sources of smoke, fume, or fire must be removed from Airborne Maintenance Kit (AMK).

2. Dry shingle, coarse round gravel or pebbles can be used as ballast.

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MAINTENANCE (M)

Establish airplane in unpressurized flight configuration (AMM DDG 21-32-02).

1. For 787-8 **TQA to TQF**
   A. For manual pressurization control operational:
      1) Set the Pressurization Panel (P5) FWD OUTFLOW VALVE and AFT OUTFLOW VALVE switches to MAN.
      2) Hold both manual switches CLOSE until the EICAS outflow valve position indicator reads CL, or if EICAS indication is not available hold the switches CLOSE for 30 seconds and confirm the forward and aft outflow valve doors are closed.
      3) Hold both manual switches OPEN until the EICAS outflow valve position indicator reads OP, or if EICAS indication is not available hold the switches OPEN for 30 seconds and confirm the forward and aft outflow valve doors are full open.
      4) Set the Pressurization Panel (P5) FWD OUTFLOW VALVE and AFT OUTFLOW VALVE switches to MAN.
   B. For manual pressure control inoperative (extended overwater flight prohibited):
      1) Remove the associated outflow valve.
   C. Deactivate the forward and aft lower cargo compartment smoke detection system.
      1) For forward lower cargo compartment smoke detection system:
         a. Using a flight deck multi-function display only, open the following circuit breakers and lock with an INOP tag.
            - SMOKE DETECTOR-FWD CARGO 1A
            - SMOKE DETECTOR-FWD CARGO 1B
            - SMOKE DETECTOR-FWD CARGO 2A
            - SMOKE DETECTOR-FWD CARGO 2B

2) For aft lower cargo compartment smoke detection system:
    a. Using a flight deck multi-function display only, open the following circuit breakers and lock with an INOP tag.
        - SMOKE DETECTOR-AFT CARGO 1A
        - SMOKE DETECTOR-AFT CARGO 1B
        - SMOKE DETECTOR-AFT CARGO 2A
        - SMOKE DETECTOR-AFT CARGO 2B

    Note: The DET FIRE CARGO FWD and DET FIRE CARGO AFT advisory messages and status messages for all cargo fire detectors will be displayed.

D. For OFCR or OFAR installed:
1) Deactivate the crew/attendant rest(s) closed.
    a. Remove all baggage and personal items from the associated crew/attendant rest.

    Note: Blankets, pillows and other items normally used in the crew rest may remain.

    b. Close the associated crew/attendant rest entrance door.

2. For 787-9 **TWA to TWB**

A. For manual pressurization control operational:
1) Set the Pressurization Panel (P5) FWD OUTFLOW VALVE and AFT OUTFLOW VALVE switches to MAN.
2) Hold both manual switches CLOSE until the EICAS outflow valve position indicator reads CL and confirm the forward and aft outflow valve doors are closed.
3) Hold both manual switches OPEN until the EICAS outflow valve position indicator is in the 1 o’clock position and confirm the forward and aft outflow valve doors are full open.
4) Set the Pressurization Panel (P5) FWD OUTFLOW VALVE and AFT OUTFLOW VALVE switches to MAN.

B. For manual pressure control inoperative (extended overwater flight prohibited):
1) Remove the associated outflow valve.

C. Deactivate the forward and aft lower cargo compartment smoke detection system.
1) For forward lower cargo compartment smoke detection system:
    a. Using a flight deck multi-function display only, open the following circuit breakers and lock with an INOP tag.
        - SMOKE DETECTOR-FWD CARGO 1A
        - SMOKE DETECTOR-FWD CARGO 1B
        - SMOKE DETECTOR-FWD CARGO 2A
        - SMOKE DETECTOR-FWD CARGO 2B

2) For aft lower cargo compartment smoke detection system:
    a. Using a flight deck multi-function display only, open the following circuit breakers and lock with an INOP tag.
        - SMOKE DETECTOR-AFT CARGO 1A
        - SMOKE DETECTOR-AFT CARGO 1B
        - SMOKE DETECTOR-AFT CARGO 2A
        - SMOKE DETECTOR-AFT CARGO 2B

    Note: The DET FIRE CARGO FWD and DET FIRE CARGO AFT advisory messages and status messages for all cargo fire detectors will be displayed.

D. For OFCR or OFAR installed:
1. Deactivate the crew/attendant rest(s) closed.
    a. Remove all baggage and personal items from the associated crew/attendant rest.

    Note: Blankets, pillows and other items normally used in the crew rest may remain.

    b. Close the associated crew/attendant rest entrance door.

OPERATIONS (O)

Note:
1. The CABIN ALTITUDE AUTO caution message will be displayed.
2. The DET FIRE CARGO FWD and DET FIRE CARGO AFT advisory messages will be displayed.

1. Flight is conducted unpressurized.
2. Cargo compartments must remain empty, except for ballast, empty cargo containers (ballast may be loaded in ULDs), fly away kits, pallets, and cargo restraint components.
3. Use MEL Item 21-31-01B (O) procedure.

UNCONTROLLED IF DOWNLOADED OR PRINTED

21-41-01 Overhead Flight Crew Rest (OFCR) Duct Heater System

Interval	Installed	Required	Procedure
C	1	0	**(M) (P)**

May be inoperative deactivated.

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MAINTENANCE (M)

Deactivate the overhead flight crew rest (OFCR) duct heater (AMM DDG 21-41-01).

1. Using a flight deck multi-function display only, open circuit breaker HEATER- FLT CREW REST and lock with an INOP tag.
2. Gain access to flight crew rest duct heater.
3. Disconnect, cap and stow electrical connector to flight crew rest duct heater.

OPERATIONS NOTE

1. Temperature control will be degraded and the OFCR may not be usable.
2. For augmented flight crew operations, flight crew duty periods should be adjusted appropriately.
3. Cold crew rest temperature can be mitigated by disabling the humidifier. To disable the humidifier, follow the procedures in DDG item 21-71-02.

21-41-02 Overhead Flight Attendant Rest (OFAR) Duct Heater System

Interval	Installed	Required	Procedure
C	1	0	**(M) (P)**

May be inoperative deactivated.

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MAINTENANCE (M)

Deactivate the overhead flight attendant rest (OFAR) duct heater (AMM DDG 21-41-02).

1. Using a flight deck multi-function display only, open circuit breaker HEATER- ATTEND CREW REST and lock with an INOP tag.
2. Gain access to flight attendant rest duct heater.
3. Disconnect, cap and stow electrical connector to flight attendant rest duct heater.

OPERATIONS NOTE

1. Temperature control will be degraded and the OFCR may not be usable.
2. Cold crew rest temperature can be mitigated by disabling the humidifier. To disable the humidifier, follow the procedures in DDG item 21-71-03.

21-43-01 Forward Cargo Heat Supply Shutoff Valve

Interval	Installed	Required	Procedure
C	1	0	**(M) (O) (P) (MV)**

May be inoperative provided:

a. Valve is deactivated closed.

b. Forward EE cooling exhaust overboard vent valve is deactivated open.

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Note: The airplane must also be dispatched using MEL Item 21-27-04.

MAINTENANCE (M)

Deactivate the forward cargo heat supply shutoff valve closed and deactivate the forward equipment cooling exhaust overboard vent valve open (AMM DDG 21-43-01).

1. Deactivate the forward cargo heat supply shutoff valve closed.
   A. Set (P5) FWD CARGO TEMP switch OFF.
   B. Using a flight deck multi-function display only, open the following circuit breakers and lock with an INOP tag:
      - SUPPLY SOV CLOSE-FWD CARGO
      - SUPPLY SOV OPEN-FWD CARGO
   C. Gain access to the forward cargo heat supply shutoff valve.
   D. Turn the open/close knob until the valve is in the CLOSED position.
2. Deactivate forward equipment cooling exhaust overboard vent valve open.
   A. Using a flight deck multi-function display only, open the following circuit breakers and lock with an INOP tag:
      - OVERBOARD VLV CL-FWD EQUIP CLG
      - OVERBOARD VLV OP-FWD EQUIP CLG

   Note: The EQUIP OVBD VENT VLV FWD status message may be displayed.

   B. Gain access to forward equipment cooling exhaust overboard vent valve.
   C. Turn the open/close knob until the valve is fully OPEN.

OPERATIONS (O)

1. Set (P5) FWD CARGO TEMP switch OFF.
2. Forward cargo compartment heat is not available. Temperature sensitive cargo should not be carried in the forward cargo compartment.
3. The CARGO HEAT FWD advisory message will be displayed.

21-43-02 Forward Cargo Heat Exhaust System

Interval	Installed	Required	Procedure
C	1	0	**(M) (P) (MV)**

May be inoperative provided:

a. Exhaust shutoff valve is deactivated closed.

b. Exhaust fan is deactivated.

MAINTENANCE (M)

Deactivate forward cargo exhaust valve closed and deactivate the exhaust fan (AMM DDG 21-43-02).

1. Deactivate forward cargo heat exhaust shutoff valve closed.
   A. Using a flight deck multi-function display only, open the following circuit breakers and lock with an INOP tag:
      - EXHAUST SOV CLOSE-FWD CARGO
      - EXHAUST SOV OPEN-FWD CARGO
   B. Gain access to the forward cargo heat exhaust shutoff valve.
   C. Turn the open/close knob until the valve is in the CLOSED position.
2. Deactivate forward cargo heat exhaust fan.
   A. Using a flight deck multi-function display only, open the following circuit breakers and lock with an INOP tag:
      - MC-FWD CARGO EXHAUST FAN
      - EXH FAN-FWD CARGO HT

OPERATIONS NOTE

1. Cargo heat is not available, Temperature control and odor control of the forward cargo compartment will be degraded. Temperature sensitive cargo, live animals, and cargo with strong odors should not be carried in the forward cargo compartment.

21-43-03 Forward Cargo Heat Electric Heater

21-43-03-01 **787-8** **TQA to TQF**

Interval	Installed	Required	Procedure
C	1	0	**(M) (P) (MV)**

May be inoperative deactivated.

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MAINTENANCE (M)

Deactivate the inoperative forward cargo heater (AMM DDG 21-43-03).

1. Using a flight deck multi-function display only, open the following circuit breakers and lock with an INOP tag:
    - HEATER-FWD CARGO ELEMENT 1
    - HEATER-FWD CARGO ELEMENT 2
2. Gain access to forward cargo heater.
3. Disconnect, cap and stow electrical connector to forward cargo heater.

OPERATIONS NOTE

1. Forward cargo heat may be degraded. Temperature sensitive cargo should not be carried in the forward cargo compartment.

21-43-03 Forward Cargo Heat Electric Heater

21-43-03-02 **787-9** **TWA to TWB**

Interval	Installed	Required	Procedure
C	2	0	**(M) (P) (MV)**

May be inoperative deactivated.

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MAINTENANCE (M)

Deactivate the inoperative forward cargo heater (AMM DDG 21-43-03).

1. Using a flight deck multi-function display only, open the following circuit breakers and lock with an INOP tag:
   A. For heater 1 inoperative:
      - HEATER-FWD CARGO ELEMENT 1
      - HEATER-FWD CARGO ELEMENT 2
   B. For heater 2 inoperative:
      - HEATER 2-FWD CARGO ELEMENT 1
      - HEATER 2-FWD CARGO ELEMENT 2
2. Gain access to inoperative forward cargo heater.
3. Disconnect, cap and stow electrical connector to inoperative forward cargo heater.

OPERATIONS NOTE

For one or both electric heaters inoperative, forward cargo heat may be degraded. Temperature sensitive cargo should not be carried in the forward cargo compartment.

21-43-04 Forward CARGO TEMP Switch Lights

21-43-04-01 OFF Light

Interval	Installed	Required	Procedure
C	1	0	**(P)**

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21-43-04 Forward CARGO TEMP Switch Lights

21-43-04-02 AUTO Light

Interval	Installed	Required	Procedure
C	1	0	**(P)**

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21-44-01 Bulk Cargo Heat System

Interval	Installed	Required	Procedure
C	1	0	**(M) (O) (P) (MV)**

May be inoperative provided:

a. Bulk cargo heat supply valve is deactivated closed.
b. Bulk cargo heat supply fan is deactivated.
c. Bulk cargo electric heater(s) is deactivated.

MAINTENANCE (M)

Deactivate bulk cargo heat system (AMM DDG 21-44-01).

1. Set (P5) BULK CARGO TEMP switch OFF.
2. Deactivate the bulk cargo heat supply valve closed.
   A. Using a flight deck multi-function display only, open the following circuit breakers and lock with an INOP tag:
      - SOV CLOSE-BULK CARGO SUPPLY
      - SOV OPEN-BULK CARGO SUPPLY
   B. Gain access to supply valve.
   C. Turn the open/close knob until valve is in the CLOSED position.
3. Deactivate the bulk cargo heat supply fan.
   A. Using a flight deck multi-function display only, open the BULK CARGO SUPPLY FAN circuit breaker and lock with an INOP tag.
   B. Gain access to bulk cargo heat supply fan.
   C. Disconnect, cap and stow the electrical connector to the bulk cargo heat supply fan.
4. Deactivate the bulk cargo electric heater(s).
   A. Using a flight deck multi-function display only, open the following circuit breakers and lock with an INOP tag:
      - HEATER-BULK CARGO
      - HEATER-BULK CARGO 2
   B. Gain access to bulk cargo heat electric heaters.
   C. Disconnect, cap and stow electrical connectors to the bulk cargo heat electric heaters

OPERATIONS (O)

Set (P5) BULK CARGO TEMP switch OFF.

Note: 1. The CARGO HEAT BULK advisory message will be displayed.
2. Bulk cargo compartment heat is not available. Temperature sensitive cargo should not be carried in the bulk cargo compartment.

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21-44-01 Bulk Cargo Heat System

21-44-01-01 Electric Heaters

Interval	Installed	Required	Procedure
C	2	1	**(M) (P) (MV)**

One may be inoperative deactivated.

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MAINTENANCE (M)

Deactivate inoperative bulk cargo heater (AMM DDG 21-44-01).

1. For CARGO BULK HEATER 1 inoperative:
    A. Using a flight deck multi-function display only, open HEATER-BULK CARGO circuit breaker and lock with an INOP tag.
2. For CARGO BULK HEATER 2 inoperative:
    A. Using a flight deck multi-function display only, open HEATER-BULK CARGO 2 circuit breaker and lock with an INOP tag.
3. Gain access to the inoperative bulk cargo heat electric heater.
4. Disconnect, cap and stow electrical connector to the inoperative bulk cargo heat electric heater.

OPERATIONS NOTE

1. The bulk cargo heat will operate, but at a reduced heating capability.
2. The CARGO TEMP BULK OFF light will illuminate and CARGO BULK HEATER 1 or CARGO BULK HEATER 2, as appropriate, will display after landing.

21-44-01 Bulk Cargo Heat System

21-44-01-02 Bulk CARGO TEMP Switch OFF Light

Interval	Installed	Required	Procedure
C	1	0	**(P)**

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21-44-01 Bulk Cargo Heat System

21-44-01-03 Bulk CARGO TEMP Switch AUTO Light

Interval	Installed	Required	Procedure
C	1	0	**(P)**

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21-44-02 Item Moved

Interval	Installed	Required	Procedure
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Dispatch relief for this equipment moved to item 21-44-01.

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21-44-03 **Item Moved**

Interval	Installed	Required	Procedure
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Dispatch relief for this equipment moved to item 21-44-01.

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21-44-04 **Item Moved**

Interval	Installed	Required	Procedure
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Dispatch relief for this equipment moved to item 21-44-01.

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21-45-01 Flight Deck Foot Rest Surface Heaters

Interval	Installed	Required	Procedure
C	4	0	**(M) (P)**

May be inoperative deactivated.

MAINTENANCE (M)

Deactivate the inoperative foot heater (AMM DDG 21-45-01).

1. For captain’s foot heater inoperative:
   - A. Using a flight deck multi-function display only, open circuit breaker HEATER-CAPT FOOT and lock with an INOP tag.
   - B. Gain access to captain’s foot heater.
   - C. Disconnect, cap and stow electrical connector to captain’s foot heater.
2. For first officer’s foot heater inoperative:
   - A. Using a flight deck multi-function display only, open circuit breaker HEATER-FO FOOT and lock with an INOP tag.
   - B. Gain access to first officer’s foot heater.
   - C. Disconnect, cap and stow electrical connector to first officer’s foot heater.

21-45-02 Flight Deck Shoulder Duct Heaters

Interval	Installed	Required	Procedure
C	2	0	**(M) (P)**

May be inoperative deactivated.

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MAINTENANCE (M)

Deactivate the inoperative shoulder heater (AMM DDG 21-45-02).

1. For captain’s shoulder heater inoperative:
    - A. Using a flight deck multi-function display only, open circuit breaker HEATER-CAPT SHOULDER and lock with an INOP tag.
    - B. Gain access to captain’s shoulder heater.
    - C. Disconnect, cap and stow electrical connector to captain’s shoulder heater.
2. For first officer’s shoulder heater inoperative:
    - A. Using a flight deck multi-function display only, open circuit breaker HEATER-FO SHOULDER and lock with an INOP tag.
    - B. Gain access to first officer’s shoulder heater.
    - C. Disconnect, cap and stow electrical connector to first officer’s shoulder heater.

21-45-03 Galley Area Duct Heaters

Interval	Installed	Required	Procedure
C	5	0	**(M) (P)**

May be inoperative deactivated.

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MAINTENANCE (M)

Deactivate the inoperative galley heater (AMM DDG 21-45-03).

1. For forward galley heater inoperative:
   A. Using a flight deck multi-function display only, open circuit breaker HEATER-GALLEY FWD and lock with an INOP tag.
   B. Gain access to forward galley heater.
   C. Disconnect, cap and stow electrical connector to forward galley heater.
2. For mid galley heater inoperative:
   A. Using a flight deck multi-function display only, open the inoperative heater circuit breakers and lock with an INOP tag:
      - HEATER-GALLEY MID 1
      - HEATER-GALLEY MID 2
      - HEATER-GALLEY MID 3
   B. Gain access to mid galley heater.
   C. Disconnect, cap and stow electrical connector to mid galley heater.
3. For aft galley heater inoperative:
   A. Using a flight deck multi-function display only, open the inoperative heater circuit breakers and lock with an INOP tag:
      - HEATER-GALLEY AFT 1
      - HEATER-GALLEY AFT 2
   B. Gain access to aft galley heater.
   C. Disconnect, cap and stow electrical connector to aft galley heater.

21-45-04 Passenger Entry Door Area Floor Panel Surface Heater

Interval	Installed	Required	Procedure
D	8	0	**(M) (P)**

May be inoperative deactivated.

MAINTENANCE (M)

Deactivate the inoperative floor panel heater (AMM DDG 21-45-04).

1. Using a flight deck multi-function display only, open the appropriate circuit breaker and lock with an INOP tag:
   - A. For heater at door 1 left inoperative, HEATER-DOOR 1L.
   - B. For heater at door 1 right inoperative, HEATER-DOOR 1R.
   - C. For heater at door 2 left inoperative, HEATER-DOOR 2L.
   - D. For heater at door 2 right inoperative, HEATER-DOOR 2R.
   - E. For heater at door 3 left inoperative, HEATER-DOOR 3L.
   - F. For heater at door 3 right inoperative, HEATER-DOOR 3R.
   - G. For heater at door 4 left inoperative, HEATER-DOOR 4L.
   - H. For heater at door 4 right inoperative, HEATER-DOOR 4R.

21-45-05 Zonal Duct Heaters

Interval	Installed	Required	Procedure
C	2	0	**(M) (P)**

May be inoperative deactivated.

MAINTENANCE (M)

Deactivate inoperative heater (AMM DDG 21-45-05).

1. For zone A1 heater inoperative:
   A. Using a flight deck multi-function display only, open circuit breaker HEATER-CABIN ZONE A and lock with an INOP tag.
   B. Gain access to zone A1 heater.
   C. Disconnect, cap and stow electrical connector to zone A1 heater.
2. For zone B1 heater inoperative:
   A. Using a flight deck multi-function display only, open the following circuit breakers and lock with an INOP tag:
      - HEATER-CABIN ZONE B ELEMENT 1
      - HEATER-CABIN ZONE B ELEMENT 2
   B. Gain access to zone B1 heater.
   C. Disconnect, cap and stow electrical connector to zone B1 heater.

21-51-01 Cabin Air Compressor (CAC) Systems

21-51-01-02 Airplanes With OFCR and OFAR Installed

21-51-01-02-01 Left CACs

21-51-01-02-01-01 787-8/-9

Interval	Installed	Required	Procedure
C	2	1	**(M) (P) (MV)**

One may be inoperative provided:

a. Inoperative CAC is deactivated.
b. Left air conditioning pack operates normally.
c. VFSGs associated with operating left CACs operate normally.
d. Trim air systems operate normally.
e. For OFCR or OFAR occupied, one opposite side Cabin Air Compressor inoperative, airplane remains at or below FL 350.

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MAINTENANCE (M)

Note: 1. For an air conditioning pack to be operating normally, the following items must operate normally.

MEL Item	Associated Status Message
21-51-09	CABIN TEMP CONTROL L or R
21-52-01	PACK L or R
21-52-03	PACK ACM L or R
21-52-04	ACM CPRSR OUTLET SNSR L or R
21-52-05	CONDENSER INLET SENSOR L or R
21-52-05	LOW LIMIT VALVE L or R
21-52-07	PACK OUTLET TEMP SENSORS L or R
21-52-08	ECONOMY COOLING VALVE L or R
21-52-09	ACM BYPASS VALVE L or R
21-52-10	RAM AIR INLET DOOR L or R
21-52-11	RAM AIR EXIT DOOR L or R
21-52-12	RAM AIR FAN L or R
21-52-13	PACK BAY ODS LOOP L1 or L2 or R1 or R2

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2. For the left trim air system to be operating normally, the following items must operate normally.

MEL Item	Associated Status Message
21-61-01	TRIM VALVE FLIGHT DECK L
21-61-02	DUCT SENSORS FLIGHT DECK L
21-61-04	TRIM VALVE ZONE B, D
21-61-05	DUCT SENSOR ZONE B2, D
21-62-01	TRIM AIR PRSOV L

3. For the right trim air system to be operating normally, the following items must operate normally.

MEL Item	Associated Status Message
21-61-01	TRIM VALVE FLIGHT DECK R
21-61-02	DUCT SENSORS FLIGHT DECK R
21-61-04	TRIM VALVE ZONE A, C
21-61-05	DUCT SENSOR ZONE A2, C
21-62-01	TRIM AIR PRSOV R

4. CACs and their associated VFSGs are listed below:

Cabin Air Compressor	Associated VFSG
CAC L1	VFSG L1
CAC L2	VFSG L2
CAC R1	VFSG R1
CAC R2	VFSG R2

5. A VFSG system is considered to be operating normally if its associated status message (ELEC GEN SYS L1, L2, R1 or R2) is not displayed.

Deactivate the inoperative cabin air compressor and confirm that associated check valve operates normally (AMM DDG 21-51-01).

1. Set the affected cabin air compressor power switch OFF on the MISC SYSTEM CTRLS (MSC) maintenance page.
2. Confirm associated cabin air compressor check valve operates normally:
   A. Set associated air conditioning pack ON for five minutes.

      Note: If the RAF is inoperative, the pack will not operate on the ground. The PACK L or PACK MODE L advisory message will be displayed when ram air duct cooling is not available.

   B. On AIR CONDITIONING maintenance page 1, confirm that COMP OUT temperature of the inoperative CAC is at least 10 deg. C less than the COMP OUT temperature of the associated operating CAC.
3. For check valve not operating normally, set associated pack OFF. The airplane may be dispatched using MEL Item 21-52-01.

OPERATIONS NOTE

1. If cabin temperatures become warmer than desired, consider one or more of the following temporary actions:
   A. Select IFE system modes designed to reduce cabin heat loads.
      Note: Availability of modes dependent on IFE system installed and airline modifiable options.
   B. Set IFE off using the IFE Power switch on the Video Control Station.
   C. Select HEAT REDUCTION mode using the Cabin Attendant Panel TEMPERATURE menu (adjusts cabin lighting and window shading).
2. If cabin or flight deck temperatures become too cool, climbing to a higher altitude will increase the heating capability of the air conditioning system.
3. In the cruise mode, the cabin altitude is normally at or below 6,000 feet. During some degraded operations, the cabin altitude may increase to 8,000 feet. This can occur if the air conditioning system is not achieving cabin temperature and ventilation rate targets, and would be more likely with an inoperative pack or CAC.
4. For only L1 CAC inoperative, PACK R Advisory message may be displayed for approximately 60 seconds after takeoff and after landing.
5. For only R1 CAC inoperative, PACK L Advisory message may be displayed for approximately 60 seconds after takeoff and after landing.

21-51-01 **Cabin Air Compressor (CAC) Systems**
21-51-01-02 **Airplanes With OFCR and OFAR Installed**
21-51-01-02-01 **Left CACs**

21-51-01-02-01-03 **787-8/-9**

Interval	Installed	Required	Procedure
C	2	0	**(M) (P) (MV)**

May be inoperative provided:

a. Left CACs are deactivated.
b. Left air conditioning pack is considered inoperative.
c. Right trim air system operates normally.
d. For OFCR or OFAR occupied, airplane remains at or below FL 350.
e. VFSGs associated with right CACs operate normally.

Note: The airplane must also be dispatched using MEL Item 21-52-01.

MAINTENANCE (M)

1. Use MEL Item 21-51-01-02-01-01 (M) procedure.

OPERATIONS NOTE

1. Use MEL Item 21-51-01-02-01-01 operations note.

21-51-01 **Cabin Air Compressor (CAC) Systems**
21-51-01-02 **Airplanes With OFCR and OFAR Installed**

21-51-01-02-02 **Right CACs**

21-51-01-02-02-01 **787-8/-9**

Interval	Installed	Required	Procedure
C	2	1	**(M) (P) (MV)**

One may be inoperative provided:

a. Inoperative CAC is deactivated.
b. Right air conditioning pack operates normally.
c. VFSG associated with operating right CAC operate normally.
d. Trim air systems operate normally.
e. For OFCR or OFAR occupied, and one opposite side Cabin Air Compressor inoperative, airplane remains at or below FL 350.

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MAINTENANCE (M)

1. Use MEL Item 21-51-01-02-01-01 (M) procedure.

OPERATIONS (O)

1. Use MEL Item 21-51-01-02-01-01 operations note.

21-51-01 **Cabin Air Compressor (CAC) Systems**
21-51-01-02 **Airplanes With OFCR and OFAR Installed**
21-51-01-02-02 **Right CACs**

21-51-01-02-02-03 **787-8/-9**

Interval	Installed	Required	Procedure
C	2	0	**(M) (P) (MV)**

May be inoperative provided:
a. Right CACs are deactivated.
b. Right air conditioning pack is considered inoperative.
c. Left trim air system operates normally.
d. For OFCR or OFAR occupied, airplane remains at or below FL 350.
e. VFSGs associated with left CACs operate normally.

Note: The airplane must also be dispatched using MEL Item 21-52-01.

MAINTENANCE (M)

1. Use MEL Item 21-51-01-02-01-01 (M) procedure.

OPERATIONS NOTE

1. Use MEL Item 21-51-01-02-01-01 operations note.

21-51-02 Cabin Air Compressor (CAC) Deflector Doors

21-51-02A Door Retracted

Interval	Installed	Required	Procedure
C	2	0	**(M) (P)**

May be inoperative provided:
a. Door is deactivated in retracted position.
b. Associated air conditioning pack operates normally.

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MAINTENANCE (M)

Note: For an air conditioning pack to be operating normally, certain items associated with that system must operate normally. See MEL Item 21-51-01 for a list of those items.

Deactivate deflector door in retracted position (AMM DDG 21-51-02).

1. For left CAC deflector door:
   A. Set left air conditioning pack OFF.
   B. Set the GND TEST selector to ENABLE no less than 30-seconds prior to opening the Pack Control Unit circuit breakers.
   C. Open the following circuit breakers and lock with a DO NOT CLOSE tag:
      - PACK CTRL UNIT-CHAN L1
      - PACK CTRL UNIT-CHAN L2
   D. Gain access to the left CAC deflector door assembly.
   E. Disconnect, cap and stow deflector door actuator electrical connector.
   F. Remove bolt, countersunk washer, bushing, washer and nut from rod end of actuator and CAC deflector door clevis.
   G. Remove fixed link from stowed position on actuator and reinstall on opposite side of actuator with short end toward deflector door.
   H. Reinstall actuator in its normal position with the fixed link attached to the closed deflector door.
   I. Confirm deflector door is in retracted position.
   J. Close the following circuit breakers:
      - PACK CTRL UNIT-CHAN L1
      - PACK CTRL UNIT-CHAN L2
   K. Return the GND TEST selector to NORM.
   L. Set left air conditioning PACK switch to AUTO.

2. For right CAC deflector door:
   - A. Set right air conditioning pack OFF.
   - B. Set the GND TEST selector to ENABLE no less than 30-seconds prior to opening the Pack Control Unit circuit breakers.
   - C. Open the following circuit breakers and lock with a DO NOT CLOSE tag:
     - PACK CTRL UNIT-CHAN R1
     - PACK CTRL UNIT-CHAN R2
   - D. Gain access to the right CAC deflector door assembly.
   - E. Disconnect, cap and stow deflector door actuator electrical connector.
   - F. Remove bolt, countersunk washer, bushing, washer and nut from rod end of actuator and CAC deflector door clevis.
   - G. Remove fixed link from stowed position on actuator and reinstall on opposite side of actuator with short end toward deflector door.
   - H. Reinstall actuator in its normal position with the fixed link attached to the closed deflector door.
   - I. Confirm deflector door is in retracted position.
   - J. Close the following circuit breakers:
     - PACK CTRL UNIT-CHAN R1
     - PACK CTRL UNIT-CHAN R2
   - K. Return the GND TEST selector to NORM.
   - L. Set right air conditioning PACK switch to AUTO.

OPERATIONS NOTE

1. To reduce the possibility of ingesting foreign material into the CAC, set associated PACK OFF during takeoff and landing when operating on contaminated runways.

21-51-02 Cabin Air Compressor (CAC) Deflector Doors

21-51-02B Door Extended

Interval	Installed	Required	Procedure
C	2	1	**(M) (O) (P)**

May be inoperative provided:

a. Door is deactivated in extended position.
b. Associated air conditioning pack is considered inoperative.
c. Opposite air conditioning pack operates normally.
d. Appropriate performance adjustment are applied.

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Note: The airplane must also be dispatched using MEL Item 21-52-01.

MAINTENANCE (M)

Note: For an air conditioning pack to be operating normally, certain items associated with that system must operate normally. See MEL Item 21-51-01 for a list of those items.

Deactivate deflector door in extended position (AMM DDG 21-51-02).

1. For left CAC deflector door:
    A. Set left air conditioning pack OFF.
    B. Set the GND TEST selector to ENABLE no less than 30-seconds prior to opening the Pack Control Unit circuit breakers.
    C. Open the following circuit breakers and lock with a DO NOT CLOSE tag
        - PACK CTRL UNIT-CHAN L1
        - PACK CTRL UNIT-CHAN L2
    D. Gain access to the left CAC deflector door assembly.
    E. Disconnect, cap and stow deflector door actuator electrical connector.
    F. Remove bolt, countersunk washer, bushing, washer and nut from rod end of actuator and CAC deflector door clevis.
    G. Remove fixed link from stowed position on actuator and reinstall on opposite side of actuator with long end toward deflector door.
    H. Reinstall actuator in its normal position with the fixed link attached to the opened deflector door.
    I. Confirm deflector door is in the fully extended position.
    J. Close the following circuit breakers:
        - PACK CTRL UNIT-CHAN L1
        - PACK CTRL UNIT-CHAN L2
    K. Return the GND TEST selector to NORM.
    L. Set left air conditioning PACK switch to OFF.

2. For right CAC deflector door:
   - A. Set right air conditioning pack OFF.
   - B. Set the GND TEST selector to ENABLE no less than 30-seconds prior to opening the Pack Control Unit circuit breakers.
   - C. Open the following circuit breakers and lock with a DO NOT CLOSE tag:
     - PACK CTRL UNIT-CHAN R1
     - PACK CTRL UNIT-CHAN R2
   - D. Gain access to the right CAC deflector door assembly.
   - E. Disconnect, cap and stow deflector door actuator electrical connector.
   - F. Remove bolt, countersunk washer, bushing, washer and nut from rod end of actuator and CAC deflector door clevis.
   - G. Remove fixed link from stowed position on actuator and reinstall on opposite side of actuator with long end toward deflector door.
   - H. Reinstall actuator in its normal position with the fixed link attached to the opened deflector door.
   - I. Confirm deflector door is in the fully extended position.
   - J. Close the following circuit breakers:
     - PACK CTRL UNIT-CHAN R1
     - PACK CTRL UNIT-CHAN R2
   - K. Return the GND TEST selector to NORM.
   - L. Set right air conditioning PACK switch to OFF.

OPERATIONS NOTE

1. Apply performance adjustments per MEL Item 21-52-01.

21-51-03 Cabin Air Compressor (CAC) Inlet Pressure Sensors

21-51-03-01 Left Inlet Pressure Sensors

21-51-03-01A Left Air Conditioning Pack Operates

Interval	Installed	Required	Procedure
C	2	1	**(P)**

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UNCONTROLLED IF DOWNLOADED OR PRINTED

21-51-03 Cabin Air Compressor (CAC) Inlet Pressure Sensors

21-51-03-01 Left Inlet Pressure Sensors

21-51-03-01B Left Air Conditioning Pack Considered Inoperative

Interval	Installed	Required	Procedure
C	2	0	**(P)**

May be inoperative provided:

a. Right CAC inlet pressure sensor operates normally.
b. Left air conditioning pack is considered inoperative.

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Note: The airplane must also be dispatched using MEL Item 21-52-01.

UNCONTROLLED IF DOWNLOADED OR PRINTED

21-51-03 Cabin Air Compressor (CAC) Inlet Pressure Sensors

21-51-03-02 Right Inlet Pressure Sensors

21-51-03-02A Right Air Conditioning Pack Operates

Interval	Installed	Required	Procedure
C	2	1	**(P)**

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UNCONTROLLED IF DOWNLOADED OR PRINTED

21-51-03 Cabin Air Compressor (CAC) Inlet Pressure Sensors
21-51-03-02 Right Inlet Pressure Sensors

21-51-03-02B Right Air Conditioning Pack Considered Inoperative

Interval	Installed	Required	Procedure
C	2	0	**(P)**

May be inoperative provided:

a. Left CAC inlet pressure sensor operates normally.
b. Right air conditioning pack is considered inoperative.

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Note: The airplane must also be dispatched using MEL Item 21-52-01.

UNCONTROLLED IF DOWNLOADED OR PRINTED

21-51-04 Cabin Air Compressor (CAC) Variable Diffusers

Interval	Installed	Required	Procedure
C	4	2	**(P)**

May be inoperative provided:
a. Associated CAC is considered inoperative.

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Note: The airplane must also be dispatched using MEL Item 21-52-01.

UNCONTROLLED IF DOWNLOADED OR PRINTED

21-51-05 Cabin Air Compressor (CAC) Add Heat Valves

Interval	Installed	Required	Procedure
C	4	2	**(P)**

May be inoperative provided:

a. Associated CAC is considered inoperative.

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Note: The airplane must also be dispatched using MEL Item 21-52-01.

21-51-06 Cabin Air Compressor (CAC) Outlet Pressure Sensors

Interval	Installed	Required	Procedure
C	4	2	**(P)**

May be inoperative provided:
a. Associated CAC is considered inoperative.

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Note: The airplane must also be dispatched using MEL Item 21-52-01.

UNCONTROLLED IF DOWNLOADED OR PRINTED

21-51-07 Cabin Air Compressor (CAC) Outlet Temperature Sensor Systems

Interval	Installed	Required	Procedure
C	4	2	**(P)**

May be inoperative provided:

a. Associated cabin air compressor is considered inoperative.

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Note: The airplane must also be dispatched using MEL Item 21-52-01.

21-51-08 Cabin Air Compressor (CAC) Flow Sensors

Interval	Installed	Required	Procedure
C	2	1	**(M) (P)**

One may be inoperative provided:
a. One of the associated CACs is deactivated.

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Note: The airplane must also be dispatched using MEL Item 21-52-01.

MAINTENANCE (M)

Deactivate one CAC associated with the inoperative sensor.
1. Use MEL Item 21-51-01 (M) procedure.

21-51-09 Pack Control Unit (PCU) Channels

21-51-09-01 Left PCU Channels

21-51-09-01A Left Air Conditioning Pack Operates

Interval	Installed	Required	Procedure
C	2	1	**(P)**

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21-51-09 Pack Control Unit (PCU) Channels

21-51-09-01 Left PCU Channels

21-51-09-01B Left Air Conditioning Pack Considered Inoperative

Interval	Installed	Required	Procedure
C	2	0	**(P)**

May be inoperative provided:
a. At least one right PCU channel operates normally.
b. Left air conditioning pack is considered inoperative.

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Note: The airplane must also be dispatched using MEL Item 21-52-01.

21-51-09 Pack Control Unit (PCU) Channels

21-51-09-02 Right PCU Channels

21-51-09-02A Right Air Conditioning Pack Operates

Interval	Installed	Required	Procedure
C	2	1	**(P)**

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21-51-09 Pack Control Unit (PCU) Channels
21-51-09-02 Right PCU Channels
21-51-09-02B Right Air Conditioning Pack Considered Inoperative

Interval	Installed	Required	Procedure
C	2	0	**(P)**

May be inoperative provided:
a. At least one left PCU channel operates normally.
b. Right air conditioning pack is considered inoperative.

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Note: The airplane must also be dispatched using MEL Item 21-52-01.

21-52-01 Air Conditioning Packs

21-52-01-02 Airplanes With OFCR and OFAR Installed

21-52-01-02-01 Airplanes With OFCR and OFAR Installed

Interval	Installed	Required	Procedure
C	2	1	**(M) (O) (P) (MV)**

One may be inoperative provided:

a. Verify cabin air compressors associated with operating pack operate normally before each departure.
b. VFSGs associated with operating CACs operate normally.
c. Integrated cooling recirculation air system operates normally.
d. Center hydraulic electric motor-driven pumps operate normally.
e. Alternate ventilation system operates normally.
f. Opposite trim air system operates normally.
g. For OFCR or OFAR occupied, airplane remains at or below FL 350.
h. Flight remains within 60 minutes of landing at a suitable airport.
i. Appropriate performance adjustments are applied.

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MAINTENANCE (M)

Note: 1. For a cabin air compressor to be operating normally, the following items must operate normally.

MEL Item	Associated Status Message
21-51-01	CABIN AIR CPRSR L1, L2, R1 or R2
21-51-03	CPRSR INLET PRESS SNSR L1, L2, R1 or R2
21-51-04	CPRSR VARIABLE DIFFUSER L1, L2, R1 or R2
21-51-05	CPRSR ADD HEAT VLV L1, L2, R1 or R2
21-51-06	CPRSR OUTLET PRESS SNSR L1, L2, R1 or R2
21-51-07	CPRSR OUTLET TEMP SNSR L1, L2, R1 or R2
24-22-01	ELEC GEN SYS L1, L2, R1 or R2 ELEC GEN DEBRIS L1, L2, R1 or R2
24-15-01-01	ELEC MC CAC L1/START L1 ELEC MC CAC L2/START R1 ELEC MC CAC R1/START L2 ELEC MC CAC R2/START R2

2. For the alternate ventilation system to be operating normally, the following items must operate normally.

MEL Item	Associated Status Message
21-27-02	EQUIP VENT FAN FWD
21-27-22	EQUIP EXHAUST FAN AFT
21-27-24	EQUIP OVBD VALVE AFT

MEL Item	Associated Advisory Message
21-31-03	OUTFLOW VALVE AFT
21-31-03	OUTFLOW VALVE FWD

3. For a trim air system to be operating normally, certain items must operate normally. See MEL Item 21-51-01 for a list of those items.
4. A VFSG system is considered to be operating normally if its associated status message (ELEC GEN SYS L1, L2, R1 or R2) is not displayed.

Verify both CAC's associated with the operative pack are operating normally before each departure, and for associated PCU inoperative, lock cabin air compressor deflector door in the extended position, lock ram air inlet door in 70% HEAT position and lock ram air exit doors in 90% HEAT position (AMM DDG 21-52-01).

1. Verify both CAC's associated with the operative pack are operating normally before each departure.
   A. Power the airplane using the APU.
   B. Set the operative pack ON.
   C. On AIR CONDITIONING maintenance page 1, confirm status that both CABIN AIR COMP indicate ON for the operating pack.
2. Determine whether associated PCU is inoperative.
   A. On page 2 of the AIR CONDITIONING EICAS maintenance page, confirm that PCU CHANNEL STATUS for one of the associated channels is not blank. Blank CHANNEL STATUS for both channels indicates the PCU is inoperative.
3. For associated PCU operative:
   A. Set associated air conditioning pack OFF.
4. For left PCU inoperative:
   A. Set left air conditioning pack OFF.
   B. Set the GND TEST selector to ENABLE no less than 30-seconds prior to opening the Pack Control Unit circuit breakers.
   C. Open the following circuit breakers and lock with a DO NOT CLOSE tag:
      - PACK CTRL UNIT-CHAN L1
      - PACK CTRL UNIT-CHAN L2
   D. Gain access to the left CAC deflector door assembly.
   E. Disconnect, cap and stow deflector door actuator electrical connector.
   F. Remove inlet door actuator from CAC inlet housing.

G. Remove fixed link from stowed position on actuator and reinstall on opposite side of actuator with long end towards deflector door.
H. Reinstall actuator in its normal position with the fixed link attached to the open deflector door.
I. Confirm deflector door is in the fully extended position.
J. Lock left ram air inlet door in the 70% HEAT position.
   1) Gain access to the ram air inlet door actuator.
   2) Disconnect, cap and stow the electrical connector from the actuator.
   3) Disconnect the actuator from the ram air inlet door.
   4) Remove inner cylinder anti-rotation device set screw.
   5) Move anti-rotation arm until end is flush with the housing.
   6) Turn inner cylinder manually until distance measured between the bolt centers on each end is 14.68 inches.
   7) Reinstall anti-rotation device set screw.
   8) Manually move the crank arm to align with the actuator.
   9) Reconnect actuator to the crank arm.
   10) Close the ram air inlet actuator access door.
K. Lock left ram air outlet door in the 90% HEAT position.
   1) Gain access to the ram air outlet door actuator.
   2) Disconnect, cap and stow the electrical connector from the actuator.
   3) Disconnect the actuator from the ram air outlet door.
   4) Remove inner cylinder anti-rotation device set screw.
   5) Move anti-rotation arm until end is flush with the housing.
   6) Turn inner cylinder manually until distance measured between the bolt centers on each end is 15.46 inches.
   7) Reinstall anti-rotation device set screw.
   8) Manually move the crank arm to align with the actuator.
   9) Reconnect actuator to the crank arm.
   10) Close the ram air outlet actuator access door.
L. Close the following circuit breakers:
   - PACK CTRL UNIT-CHAN L1
   - PACK CTRL UNIT-CHAN L2
M. Return the GND TEST selector to NORM.
N. Set left air conditioning pack OFF.

5. For right PCU inoperative:
A. Set right air conditioning pack OFF.
B. Set the GND TEST selector to ENABLE no less than 30-seconds prior to opening the Pack Control Unit circuit breakers.
C. Open the following circuit breakers and lock with a DO NOT CLOSE tag:
   - PACK CTRL UNIT-CHAN R1
   - PACK CTRL UNIT-CHAN R2

D. Gain access to the right CAC deflector door assembly.
E. Disconnect, cap and stow deflector door actuator electrical connector.
F. Remove inlet door actuator from CAC inlet housing.
G. Remove fixed link from stowed position on actuator and reinstall on opposite side of actuator with long end towards deflector door.
H. Reinstall actuator in its normal position with the fixed link attached to the open deflector door.
I. Confirm deflector door is in the fully extended position.
J. Lock right ram air inlet door in the 70% HEAT position.
    1) Gain access to the ram air inlet door actuator.
    2) Disconnect, cap and stow the electrical connector from the actuator.
    3) Disconnect the actuator from the ram air inlet door.
    4) Remove inner cylinder anti-rotation device set screw.
    5) Move anti-rotation arm until end is flush with the housing.
    6) Turn inner cylinder manually until distance measured between the bolt centers on each end is 14.68 inches.
    7) Reinstall anti-rotation device set screw.
    8) Manually move the crank arm to align with the actuator.
    9) Reconnect actuator to the crank arm.
    10) Close the ram air inlet actuator access door.
K. Lock right ram air outlet door in the 90% HEAT position.
    1) Gain access to the ram air outlet door actuator.
    2) Disconnect, cap and stow the electrical connector from the actuator.
    3) Disconnect the actuator from the ram air outlet door.
    4) Remove inner cylinder anti-rotation device set screw.
    5) Move anti-rotation arm until end is flush with the housing.
    6) Turn inner cylinder manually until distance measured between the bolt centers on each end is 15.46 inches.
    7) Reinstall anti-rotation device set screw.
    8) Manually move the crank arm to align with the actuator.
    9) Reconnect actuator to the crank arm.
    10) Close the ram air outlet actuator access door.
L. Close the following circuit breakers:
    - PACK CTRL UNIT-CHAN R1
    - PACK CTRL UNIT-CHAN R2
M. Return the GND TEST selector to NORM.
N. Set right air conditioning pack OFF.

OPERATIONS (O)

1. For OFCR or OFAR occupied:
   A. Airplane must remain at or below FL 350.
2. For associated PCU inoperative:
   A. Reduce enroute climb limit weight by 363 kg.

      Note: The enroute climb weight penalties are based on single engine operating speeds that approximate maximum lift-to-drag ratio speed. To account for the difference in level off altitude when operating at other speeds, multiply the enroute climb weight penalty listed above by the appropriate factor listed on page 3.00-01-00.2 in the ENROUTE DIVERSION SPEED EFFECTS paragraph.
3. Set associated air conditioning pack OFF.
4. Flight remains within 60 minutes of landing at a suitable airport.
5. If cabin temperatures become warmer than desired, consider one or more of the following temporary actions:
   A. Select IFE system modes designed to reduce cabin heat loads.

      Note: Availability of modes dependent on IFE system installed and airline modifiable options.
   B. Set IFE off using the IFE Power switch on the Video Control Station.
   C. Select HEAT REDUCTION mode using the Cabin Attendant Panel TEMPERATURE menu (adjusts cabin lighting and window shading).
6. If cabin or flight deck temperatures become too cool, climbing to a higher altitude will increase the heating capability of the air conditioning system.
7. In the cruise mode, the cabin altitude is normally at or below 6,000 feet. During some degraded operations, the cabin altitude may increase to 8,000 feet. This can occur if the air conditioning system is not achieving cabin temperature and ventilation rate targets, and would be more likely with an inoperative pack or CAC.

UNCONTROLLED IF DOWNLOADED OR PRINTED

21-52-01 Air Conditioning Packs

21-52-01-03 PACK Switch OFF Lights

Interval	Installed	Required	Procedure
C	2	0	**(P)**

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21-52-01 Air Conditioning Packs

21-52-01-04 PACK Switch AUTO Lights

Interval	Installed	Required	Procedure
C	2	0	**(P)**

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21-52-03 Air Cycle Machines (ACM)

21-52-03A Pack Considered Inoperative

Interval	Installed	Required	Procedure
C	2	1	**(P) (MV)**

One may be inoperative provided:
a. Associated air conditioning pack is considered inoperative.

Note: The airplane must also be dispatched using MEL Item 21-52-01.

21-52-03 Air Cycle Machines (ACM)

21-52-03B ACM Deactivated

Interval	Installed	Required	Procedure
C	2	1	**(M) (P) (MV)**

May be inoperative provided:

a. Inoperative ACM is deactivated.
b. Associated ram air inlet and exit doors operate normally.
c. Opposite air conditioning pack operates normally.
d. Opposite cabin air compressors operate normally.
e. Opposite trim air system operates normally.

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MAINTENANCE (M)

Note:
1. For an air conditioning pack to be operating normally, certain items associated with that system must operate normally. See MEL Item 21-51-01 for a list of those items.
2. For a cabin air compressor to be operating normally, certain items must operate normally. See MEL Item 21-52-01 for a list of those items.
3. For a trim air system to operate normally, certain items must operate normally. See MEL Item 21-51-01 for a list of those items.
4. It is recommended, but not required, to make sure that ACM has failed before using the ACM lockout tool. The air cycle machine is considered damaged and must be replaced after using the ACM lockout tool.

Deactivate air cycle machine (AMM DDG 21-52-03):

1. Remove the ACM's speed sensor and cap and stow the associated electrical connector.
2. Remove cap and stow the ACM's compressor outlet temperature sensor electrical connector.
   Note: The associated ACM CPRSR OUTLET SNSR L, R status message will be displayed.
3. Install ACM locking tool GS26097-1.

OPERATIONS NOTE

Note:
1. PACK MODE advisory message will be displayed. The pack with the inoperative air cycle machine will remain OFF on the ground and at low altitudes with the PACK MODE advisory message displayed and PACK OFF light illuminated. The pack will operate in standby cooling mode when appropriate altitude and OAT conditions exist with the PACK MODE advisory message displayed and PACK OFF light extinguished.
2. If the opposite pack fails inflight, the pack operating in standby cooling mode will continue to operate regardless of altitude or OAT to maintain cabin pressurization. A pack operating in standby cooling mode is capable of maintaining cabin pressurization at cruise altitude.

1. If cabin temperatures become warmer than desired, consider one of the following temporary actions:
   A. Select IFE system modes designed to reduce cabin heat loads.

      Note: Availability of modes dependent on IFE system installed and airline modifiable options.

   B. Set IFE off using the IFE Power switch on the Video Control Station.
   C. Select HEAT REDUCTION mode using the Cabin Attendant Panel TEMPERATURE menu (adjusts cabin lighting and window shading).
   D. Descend to a lower altitude.

21-52-04 Air Cycle Machine (ACM) Compressor Outlet Temperature Sensor Systems

Interval	Installed	Required	Procedure
C	2	1	**(P) (MV)**

One may be inoperative provided:

a. Associated ram air inlet and exit doors operate normally.
b. Opposite air conditioning pack operates normally.
c. Opposite cabin air compressors operate normally.
d. Opposite trim air system operates normally.

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MAINTENANCE (M)

1. For an air conditioning pack to be operating normally, certain items associated with that system must operate normally.
   A. See MEL Item 21-51-01 for a list of those items.
2. For a cabin air compressor to be operating normally, certain items must operate normally.
   A. See MEL Item 21-52-01 for a list of those items.
3. For a trim air system to operate normally, certain items must operate normally.
   A. See MEL Item 21-51-01 for a list of those items.

OPERATIONS NOTE

1. PACK MODE advisory message will be displayed after engine start. The pack with the inoperative ACM compressor outlet temperature sensor will remain OFF on the ground and at low altitudes with the PACK MODE advisory message displayed and PACK OFF light illuminated. The pack will operate in standby cooling mode when appropriate altitude and OAT conditions exist with the PACK MODE advisory message displayed and PACK OFF light extinguished.
2. If the opposite pack fails inflight, the pack operating in standby cooling mode will continue to operate regardless of altitude or OAT to maintain cabin pressurization. A pack operating in standby cooling mode is capable of maintaining cabin pressurization at cruise altitude.
3. If cabin temperatures become warmer than desired, consider one of the following temporary actions:
   A. Select IFE system modes designed to reduce cabin heat loads.
      Note: Availability of modes dependent on IFE system installed and airline modifiable options.
   B. Set IFE off using the IFE Power switch on the Video Control Station.
   C. Select HEAT REDUCTION mode using the Cabin Attendant Panel TEMPERATURE menu (adjusts cabin lighting and window shading).

21-52-05 Condenser Inlet Temperarture Control Systems

21-52-05-01 Low Limit Valve

Interval	Installed	Required	Procedure
C	2	1	**(M) (P) (MV)**

One may be inoperative provided:

a. Associated low limit valve is deactivated open.
b. Opposite condenser inlet temperature sensor system operates normally.
c. Opposite air conditioning pack operates normally.
d. Opposite cabin air compressors operate normally.
e. Opposite trim air system operates normally.

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MAINTENANCE (M)

Note: 1. For an air conditioning pack to be operating normally, certain items associated with that system must operate normally. See MEL Item 21-51-01 for a list of those items.
2. For a cabin air compressor to be operating normally, certain items must operate normally. See MEL Item 21-52-01 for a list of those items.
3. For a trim air system to operate normally, certain items must operate normally. See MEL Item 21-51-01 for a list of those items.

Deactivate the associated low limit valve open (AMM DDG 21-52-05).

1. For left low limit valve:
   A. Set left air conditioning pack OFF.
   B. Set the GND TEST selector to ENABLE no less than 30-seconds prior to opening the Pack Control Unit circuit breakers.
   C. Open the following circuit breakers and lock with a DO NOT CLOSE tag:
      - PACK CTRL UNIT-CHAN L1
      - PACK CTRL UNIT-CHAN L2
   D. Gain access to left low limit valve.
   E. Disconnect, cap and stow low limit valve electrical connector.
   F. Use the manual open/close knob to set valve in open position.
      Note: Locking the low limit valve open may result in display of the associated LOW LIMIT VALVE L status message.
   G. Gain access to left condenser inlet temperature sensor.
   H. Disconnect, cap and stow temperature sensor electrical connector.
      Note: The CONDENSER INLET SENSOR L status messages will be displayed.

I. Close the following circuit breakers:
    - PACK CTRL UNIT-CHAN L1
    - PACK CTRL UNIT-CHAN L2

J. Return the GND TEST selector to NORM.

K. Set pack as desired.

Note: Associated PACK or PACK MODE advisory message may be displayed.

2. For right low limit valve:

A. Select right air conditioning pack OFF.

B. Set the GND TEST selector to ENABLE no less than 30-seconds prior to opening the Pack Control Unit circuit breakers.

C. Open the following circuit breakers and lock with a DO NOT CLOSE tag:
    - PACK CTRL UNIT-CHAN R1
    - PACK CTRL UNIT-CHAN R2

D. Gain access to right low limit valve.

E. Disconnect, cap and stow low limit valve electrical connector.

F. Use the manual open/close knob to set valve in open position.

Note: Locking the low limit valve open may result in display of the associated LOW LIMIT VALVE R status message.

G. Gain access to right condenser inlet temperature sensor.

H. Disconnect, cap and stow temperature sensor electrical connector.

Note: The CONDENSER INLET SENSOR R status messages will be displayed.

I. Close the following circuit breakers:
    - PACK CTRL UNIT-CHAN R1
    - PACK CTRL UNIT-CHAN R2

J. Return the GND TEST selector to NORM.

K. Set pack as desired.

Note: Associated PACK or PACK MODE advisory message may be displayed.

3. Depending on the electrical configuration of the airplane (EP or APS) when the procedure is accomplished, either the associated PACK L(R) or PACK MODE L(R) advisory message may be displayed.

OPERATIONS NOTE

Note:
1. Associated PACK MODE or PACK advisory message may be displayed before engine start. After engine start, the associated PACK MODE advisory message will be displayed. The pack with the inoperative low limit valve will remain OFF on the ground and at low altitudes with the PACK MODE advisory message displayed and PACK OFF light illuminated. The pack will operate in standby cooling mode when appropriate altitude and OAT conditions exist with the PACK MODE advisory message displayed and PACK OFF light extinguished.
2. If the opposite pack fails inflight, the pack operating in standby cooling mode will continue to operate regardless of altitude or OAT to maintain cabin pressurization. A pack operating in standby cooling mode is capable of maintaining cabin pressurization at cruise altitude.

1. If cabin temperatures become warmer than desired, consider one or more of the following temporary actions:
   A. Select IFE system modes designed to reduce cabin heat loads.

      Note: Availability of modes dependent on IFE system installed and airline modifiable options.

   B. Set IFE off using the IFE Power switch on the Video Control Station.
   C. Select HEAT REDUCTION mode using the Cabin Attendant Panel TEMPERATURE menu (adjusts cabin lighting and window shading).

21-52-05 Condenser Inlet Temperature Control Systems

21-52-05-02 Condenser Inlet Temperature Sensor Systems

Interval	Installed	Required	Procedure
C	2	1	**(M) (P) (MV)**

One may be inoperative provided:

a. Associated low limit valve is deactivated open.
b. Opposite low limit valve operates normally.
c. Opposite air conditioning pack operates normally.
d. Opposite cabin air compressors operate normally.
e. Opposite trim air system operates normally.

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MAINTENANCE (M)

1. Use MEL Item 21-52-05-01 (M) procedure.

OPERATIONS NOTE

Note: 1. Associated PACK MODE or PACK advisory message may be displayed before engine start. After engine start, the associated PACK MODE advisory message will be displayed. The pack with the inoperative condenser inlet temperature sensor system will remain OFF on the ground and at low altitudes with the PACK MODE advisory message displayed and PACK OFF light illuminated. The pack will operate in standby cooling mode when appropriate altitude and OAT conditions exist with the PACK MODE advisory message displayed and PACK OFF light extinguished.

2. If the opposite pack fails inflight, the pack operating in standby cooling mode will continue to operate regardless of altitude or OAT to maintain cabin pressurization. A pack operating in standby coolingnmode is capable of maintaining cabin pressurization at cruise altitude.

1. If cabin temperatures become warmer than desired, consider one or more of the following temporary actions:
   A. Select IFE system modes designed to reduce cabin heat loads.
   B. Set IFE off using the IFE Power switch on the Video Control Station.
   C. Select HEAT REDUCTION mode using the Cabin Attendant Panel TEMPERATURE menu (adjusts cabin lighting and window shading).

21-52-06 Secondary Heat Exchanger Outlet Temperature Sensor Systems

Interval	Installed	Required	Procedure
C	2	0	**(P)**

May be inoperative provided:

a. Associated condenser inlet temperature sensor operates normally.

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21-52-07 Pack Outlet Temperature Sensor Systems

Interval	Installed	Required	Procedure
C	2	1	**(P) (MV)**

One may be inoperative provided:

a. Associated flight deck duct temperature sensor operates normally.
b. Opposite air conditioning pack operates normally.
c. Opposite flight deck zone trim valve operates normally.
d. Opposite trim air pressure regulator valve operates normally.
e. Flight remains within 60 minutes of landing at a suitable airport.

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MAINTENANCE NOTE

1. For an air conditioning pack to be operating normally, certain items associated with that system must operate normally.
   A. See MEL Item 21-51-01-01-01A for a list of those items.

OPERATIONS NOTE

1. If cabin or flight deck temperatures become too cool, climbing to a higher altitude will increase the heating capability of the air conditioning system.

21-52-08 Economy Cooling Valves (ECV)

Interval	Installed	Required	Procedure
C	2	1	**(M) (P) (MV)**

One may be inoperative provided:
a. Valve is deactivated open.
b. Opposite air conditioning pack operates normally.
c. Opposite cabin air compressors operate normally.
d. Opposite trim air system operates normally.

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MAINTENANCE (M)

Note:
1. For an air conditioning pack to be operating normally, certain items associated with that system must operate normally. See MEL Item 21-51-01 for a list of those items.
2. For a cabin air compressor to be operating normally, certain items must operate normally. See MEL Item 21-52-01 for a list of those items.
3. For a trim air system to operate normally, certain items must operate normally. See MEL Item 21-51-01 for a list of those items.

Deactivate the inoperative ECV open (AMM DDG 21-52-08).

1. For left air conditioning pack ECV inoperative:
   A. Set left pack OFF.
   B. Set the GND TEST selector to ENABLE no less than 30-seconds prior to opening the Pack Control Unit circuit breakers.
   C. Open the following circuit breakers and lock with a DO NOT CLOSE tag:
      - PACK CTRL UNIT-CHAN L1
      - PACK CTRL UNIT-CHAN L2
   D. Gain access to left ECV.
   E. Disconnect, cap and stow valve electrical connector.
   F. Use the manual open/close knob to set the valve open.
   G. Close the following circuit breakers:
      - PACK CTRL UNIT-CHAN L1
      - PACK CTRL UNIT-CHAN L2
   H. Return the GND TEST selector to NORM.
   I. Set pack as desired.
   Note: Associated PACK or PACK MODE advisory message may be displayed.

2. For right air conditioning pack ECV inoperative:
   A. Set right pack OFF.
   B. Set the GND TEST selector to ENABLE no less than 30-seconds prior to opening the Pack Control Unit circuit breakers.
   C. Open the following circuit breakers and lock with a DO NOT CLOSE tag:
      - PACK CTRL UNIT-CHAN R1
      - PACK CTRL UNIT-CHAN R2
   D. Gain access to right ECV.
   E. Disconnect, cap and stow valve electrical connector.
   F. Use the manual open/close knob to set the valve open.
   G. Close the following circuit breakers:
      - PACK CTRL UNIT-CHAN R1
      - PACK CTRL UNIT-CHAN R
   H. Return the GND TEST selector to NORM.
   I. Set pack as desired.

      Note: Associated PACK or PACK MODE advisory message may be displayed.
3. Depending on the electrical configuration of the airplane (EP or APS) when the procedure is accomplished, either the associated PACK L(R) or PACK MODE L(R) advisory message may be displayed.

OPERATIONS NOTE

1. Associated PACK MODE or PACK advisory message may be displayed before engine start. After engine start, the associated PACK MODE advisory message will be displayed. The pack with the inoperative economy cooling valve will remain OFF on the ground and at low altitudes with the PACK MODE advisory message displayed and PACK OFF light illuminated. The pack will operate in standby cooling mode when appropriate altitude and OAT conditions exist with the PACK MODE advisory message displayed and PACK OFF light extinguished.
2. If the opposite pack fails inflight, the pack operating in standby cooling mode will continue to operate regardless of altitude or OAT to maintain cabin pressurization. A pack operating in standby cooling mode is capable of maintaining cabin pressurization at cruise altitude.
3. If cabin temperatures become warmer than desired, consider one of the following temporary actions:
   A. Select IFE system modes designed to reduce cabin heat loads.

      Note: Availability of modes dependent on IFE system installed and airline modifiable options.
   B. Set IFE off using the IFE Power switch on the Video Control Station.
   C. Select HEAT REDUCTION mode using the Cabin Attendant Panel TEMPERATURE menu (adjusts cabin lighting and window shading).

21-52-09 Air Cycle Machine Bypass Valves

Interval	Installed	Required	Procedure
C	2	1	**(P)**

One may be inoperative provided:

a. The associated air conditioning pack is considered inoperative.

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Note: The airplane must also be dispatched using MEL Item 21-52-01.

21-52-10 Ram Air Inlet Door Systems

Interval	Installed	Required	Procedure
C	2	1	**(M) (O) (P) (MV)**

One may be inoperative provided:

a. Door is deactivated in open position.
b. Associated ram air exit door operates normally.
c. Trim air systems operate normally.
d. Associated air conditioning pack is considered inoperative.
e. The performance adjustments are applied.

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Note: The airplane must also be dispatched using MEL Item 21-52-01.

MAINTENANCE (M)

Note: For a trim air system to be operates normally, certain items must operate normally. See MEL Item 21-51-01 for a list of those items.

Deactivate the inoperative ram air inlet door open (AMM DDG 21-52-10).

1. For left ram air inlet door:
    - A. Set left air conditioning pack OFF.
    - B. Set the GND TEST selector to ENABLE no less than 30-seconds prior to opening the Pack Control Unit circuit breakers.
    - C. Open the following circuit breakers and lock with a DO NOT CLOSE tag:
        - PACK CTRL UNIT-CHAN L1
        - PACK CTRL UNIT-CHAN L2
    - D. Open the ram air inlet housing.
    - E. Disconnect, cap and stow the electrical connector from the inlet actuator.
    - F. Disconnect the actuator from the inlet door.
    - G. Manually set the actuator pushrod in the fully retracted position.
    - H. Manually set the inlet door in the fully open position.
    - I. Reconnect the actuator to the inlet door.
    - J. Close the following circuit breakers:
        - PACK CTRL UNIT-CHAN L1
        - PACK CTRL UNIT-CHAN L2
    - K. Return the GND TEST selector to NORM.
    - L. Set air conditioning pack OFF.

2. For right ram air inlet door:
   A. Set right air conditioning pack OFF.
   B. Set the GND TEST selector to ENABLE no less than 30-seconds prior to opening the Pack Control Unit circuit breakers.
   C. Open the following circuit breakers and lock with a DO NOT CLOSE tag:
      - PACK CTRL UNIT-CHAN R1
      - PACK CTRL UNIT-CHAN R2
   D. Open the ram air inlet housing.
   E. Disconnect, cap and stow the electrical connector from the inlet actuator.
   F. Disconnect the actuator from the inlet door.
   G. Manually set the actuator pushrod in the fully retracted position.
   H. Manually set the inlet door in the fully open position.
   I. Reconnect the actuator to the inlet door.
   J. Close the following circuit breakers:
      - PACK CTRL UNIT-CHAN R1
      - PACK CTRL UNIT-CHAN R2
   K. Return the GND TEST selector to NORM.
   L. Set air conditioning pack OFF.

OPERATIONS (O)

1. Reduce enroute climb limit weight by 45 kg.

   Note: The enroute climb weight penalties are based on single engine operating speeds that approximate maximum lift-to-drag ratio speed. To account for the difference in level off altitude when operating at other speeds, multiply the enroute climb weight penalty listed above by the appropriate factor listed on page 3.00-01-00.2 in the ENROUTE DIVERSION SPEED EFFECTS paragraph.

21-52-11 Ram Air Outlet Door Systems

21-52-11A Door Can Be Locked in Fixed Position

Interval	Installed	Required	Procedure
C	2	1	**(M) (O) (P) (MV)**

One may be inoperative provided:

a. Associated outlet door is deactivated in fixed position of 17.5 degrees open.
b. Associated ram air inlet door operates normally.
c. Opposite air conditioning pack operates normally.
d. Trim air systems operate normally.
e. Airplane remains at or below FL 350.
f. Appropriate performance adjustments are applied.
g. Flight remains within 60 minutes of landing at a suitable airport.

MAINTENANCE (M)

Note:
1. For an air conditioning pack to be operating normally, certain items associated with that system must operate normally. See MEL Item 21-51-01 for a list of those items.
2. For a trim air system to be operating normally, certain items must operate normally. See MEL Item 21-51-01 for a list of those items.
3. Do no operate associated air conditioning pack on ground when OAT is greater than 27 degrees C.

Deactivate the inoperative ram air outlet door 17.5 degrees open (AMM DDG 21-52-11).

1. For left ram air outlet door:
   A. Set left air conditioning pack OFF.
   B. Set the GND TEST selector to ENABLE no less than 30-seconds prior to opening the Pack Control Unit circuit breakers.
   C. Open the following circuit breakers and lock with a DO NOT CLOSE tag:
      - PACK CTRL UNIT-CHAN L1
      - PACK CTRL UNIT-CHAN L2
   D. Open the ram air outlet door actuator access door.
   E. Disconnect, cap and stow the electrical connector from the actuator.
   F. Disconnect the actuator from the crank arm.
   G. Manually set the actuator pushrod to 17.5 degrees open.
      Note: Extend the actuator to 13.93 inches measured between the bolt centers on each end.
   H. Manually move the crank arm to align with the actuator.
   I. Reconnect actuator to the crank arm.

- J. Close the ram air outlet door actuator access door.
- K. Close the following circuit breakers:
    - PACK CTRL UNIT-CHAN L1
    - PACK CTRL UNIT-CHAN L2
- L. Return the GND TEST selector to NORM.
- M. Set air conditioning pack as desired.

2. For right ram air outlet door:
    - A. Set right air conditioning pack OFF.
    - B. Set the GND TEST selector to ENABLE no less than 30-seconds prior to opening the Pack Control Unit circuit breakers.
    - C. Open the following circuit breakers and lock with a DO NOT CLOSE tag:
        - PACK CTRL UNIT-CHAN R1
        - PACK CTRL UNIT-CHAN R2
    - D. Open the ram air outlet door actuator access door.
    - E. Disconnect, cap and stow the electrical connector from the actuator.
    - F. Disconnect the actuator from the crank arm.
    - G. Manually set the actuator pushrod to 17.5 degrees open.

      Note: Extend the actuator to 13.93 inches measured between the bolt centers on each end.
    - H. Manually move the crank arm to align with the actuator.
    - I. Reconnect actuator to the crank arm.
    - J. Close the ram air outlet door actuator access door.
    - K. Close the following circuit breakers:
        - PACK CTRL UNIT-CHAN R1
        - PACK CTRL UNIT-CHAN R2
    - L. Return the GND TEST selector to NORM.
    - M. Set air conditioning pack as desired.

OPERATIONS (O)

Note:
1. Do no operate associated air conditioning pack on ground when OAT is greater than 27 degrees C.
2. Associated pack may not operate until above 32,500 ft.
3. On takeoff, the PACK ALTITUDE LIMIT caution message may appear anytime after liftoff until 1,000 feet above airport elevation. The message may be displayed for up to 2 minutes. On landing, appear at altitudes less than 1000 feet above airport until touchdown.

1. Reduce enroute climb limit weight by 590 kg.

   Note: The enroute climb weight penalties are based on single engine operating speeds that approximate maximum lift-to-drag ratio speed. To account for the difference in level off altitude when operating at other speeds, multiply the enroute climb weight penalty listed above by the appropriate factor listed on page 3.00-01-00.2 in the ENROUTE DIVERSION SPEED EFFECTS paragraph.

21-52-11 Ram Air Outlet Door Systems

21-52-11B Door Cannot Be Locked in Fixed Position

Interval	Installed	Required	Procedure
C	2	1	**(M) (O) (P) (MV)**

One may be inoperative provided:

a. Associated outlet door actuator is deactivated.
b. Associated outlet door opens and closes freely.
c. Associated ram air inlet door operates normally.
d. Opposite air conditioning pack operates normally.
e. Trim air systems operate normally.
f. Airplane remains at or below FL 350.
g. Appropriate performance adjustments are applied.
h. Flight remains within 60 minutes of landing at a suitable airport.

MAINTENANCE (M)

Note:
1. For an air conditioning pack to be operating normally, certain items associated with that system must operate normally. See MEL Item 21-51-01 for a list of those items.
2. For a trim air system to be operating normally, certain items must operate normally. See MEL Item 21-51-01 for a list of those items.
3. Do no operate associated air conditioning pack on ground when OAT is greater than 27 degrees C.

Disconnect the inoperative ram air outlet door actuator and verify the inoperative ram air outlet door is free to move fully open and fully closed (AMM DDG 21-52-11).

1. For left ram air outlet door:
   A. Set left air conditioning pack OFF.
   B. Set the GND TEST selector to ENABLE no less than 30-seconds prior to opening the Pack Control Unit circuit breakers.
   C. Open the following circuit breakers and lock with a DO NOT CLOSE tag:
      - PACK CTRL UNIT-CHAN L1
      - PACK CTRL UNIT-CHAN L2
   D. Open the ram air outlet door actuator access door.
   E. Disconnect, cap and stow the electrical connector from the actuator.
   F. Disconnect and remove the actuator and associated crank arm.
   G. Close the ram air outlet door actuator access door.
   H. Close the following circuit breakers:
      - PACK CTRL UNIT-CHAN L1
      - PACK CTRL UNIT-CHAN L2
   I. Return the GND TEST selector to NORM.
   J. Manually move exhaust door from the full open position to the full closed position to confirm freedom of movement.
   K. Set air conditioning pack as desired.

2. For right ram air outlet door:
   - A. Set right air conditioning pack OFF.
   - B. Set the GND TEST selector to ENABLE no less than 30-seconds prior to opening the Pack Control Unit circuit breakers.
   - C. Open the following circuit breakers and lock with a DO NOT CLOSE tag:
     - PACK CTRL UNIT-CHAN R1
     - PACK CTRL UNIT-CHAN R2
   - D. Open the ram air outlet door actuator access door.
   - E. Disconnect, cap and stow the electrical connector from the actuator.
   - F. Disconnect and remove the actuator and associated crank arm.
   - G. Close the ram air outlet door actuator access door.
   - H. Close the following circuit breakers:
     - PACK CTRL UNIT-CHAN R1
     - PACK CTRL UNIT-CHAN R2
   - I. Return the GND TEST selector to NORM.
   - J. Manually move exhaust door from the full open position to the full closed position to confirm freedom of movement.
   - K. Set air conditioning pack as desired.

OPERATIONS (O)

Note:
1. Do no operate associated air conditioning pack on ground when OAT is greater than 27 degrees C.
2. Associated pack may not operate until above 32,500 ft.
3. On takeoff, the PACK ALTITUDE LIMIT caution message may appear anytime after liftoff until 1,000 feet above airport elevation. The message may be displayed for up to 2 minutes. On landing, appear at altitudes less than 1000 feet above airport until touchdown.

Reduce enroute climb limit weight by 1,300 lb (590 kg).

Note: The enroute climb weight penalties are based on single engine operating speeds that approximate maximum lift-to-drag ratio speed. To account for the difference in level off altitude when operating at other speeds, multiply the enroute climb weight penalty listed above by the appropriate factor listed on page 3.00-01-00.2 in the ENROUTE DIVERSION SPEED EFFECTS paragraph.

21-52-12 Ram Air Fan

21-52-12-01 Left Ram Air Fan

Interval	Installed	Required	Procedure
C	1	0	**(M) (O) (P) (MV)**

May be inoperative provided:

a. Left ram air fan is deactivated.
b. Right ram air fan operates normally.
c. Right ram air fan motor controller operates normally.
d. Right air conditioning pack operates normally.
e. Right cabin air compressors operate normally.
f. L2 VFSG operates normally.
g. R2 VFSG operates normally.
h. R1 cabin air compressor CMSC operates normally.
i. R2 cabin air compressor CMSC operates normally.
j. Center hydraulic pump C2 operates normally.
k. Left PECS aft section operates normally.
l. Left PECS temperature sensor operates normally.
m. APU operates normally.
n. Ground operations are limited to OAT below 49 degrees C.

MAINTENANCE (M)

Note: 1. For an air conditioning pack to be operating normally, certain items associated with that system must operate normally. See MEL Item 21-51-01 for a list of those items.
2. For a cabin air compressor to be operating normally, certain items must operate normally. See MEL Item 21-52-01 for a list of those items.

Deactivate the left ram air fan (AMM DDG 21-52-12).

1. Visually inspect the ram air fan blades for broken or damaged blades. If missing/damaged blades are found, visually inspect the inside and outside of the ram air outlet header for structural damage.
2. On the MISC SYSTEM CTRLS maintenance page, select RAM FANS LEFT OFF.

Note: PACK L or PACK MODE L advisory message may be displayed.

OPERATIONS (O)

Note:

1. PACK L or PACK MODE L advisory message may be displayed.
2. The left pack will be off and will not operate normally unless airspeed is sufficient to support ram air duct cooling (approximately 120 knots). The PACK L or PACK MODE L advisory message will be displayed when ram air duct cooling is not available.
3. Before engine start RAM FAN L, HYD PUMP C1, HYD PUMP DEM R and FUEL PUMP CENTER L status messages may be displayed.
4. Simultaneous engine start is not allowed.
5. ICS galley cooling performance may be degraded during ground operations if the SCUs are loadshed from the PECS.
6. On takeoff, the PACK ALTITUDE LIMIT caution message may appear anytime after liftoff until 1,000 feet above airport elevation. The message may be displayed for up to 2 minutes. On landing, this message may appear at altitudes less than 1000 feet above airport elevation until touchdown.

1. Ground operations are limited to OAT below 49 degrees C.
2. If cabin temperatures become warmer than desired, consider one or more of the following temporary actions:
   A. Use pre-conditioned air to cool the cabin to 24 degrees C or less an hour before passenger loading.
   B. Set IFE OFF using the IFE Power switch on the Video Control Station.
   C. Select HEAT REDUCTION mode using the Cabin Attendant Panel TEMPERATURE menu.
3. To minimize PECS heating, the following options should be considered:
   A. Set packs OFF and use pre-conditioned air prior to engine start.
   B. Delay closing forward or aft cargo doors until airplane is ready for push back or engine start.
   C. Minimize APU ground operations.
   D. Start APU prior to closing cargo doors.
   E. Minimize time between cargo door closing and first engine start.
   F. Each engine should be started individually at the gate.
4. On POWER ELEC COOLING maintenance page 1, confirm SUPPLY TEMP of left and right PECS loop is 61 degrees C or lower.
5. Start the APU.
6. Start first engine.

   Note: Engine start time will be longer than normal.
7. After first engine start has been completed, on POWER ELEC COOLING maintenance page 1, confirm SUPPLY TEMP of the left and right PECS loop is 61 degrees C or lower.
8. Start second engine.
9. Shutdown APU.
10. Within three minutes after second engine start, perform flight controls freedom of movement check and extend flaps.

11. Check status page for status messages.

    Note: ELEC ENGINE STARTER L1, ELEC ENGINE STARTER R1 and ELEC APU STARTER L status messages may be displayed. No action is required.

    A. For HYD PUMP DEM R status message displayed:
       1) Set R ENG PRIMARY pump switch OFF and R ELEC DEMAND pump selector ON until HYD PUMP DEM R status message is not displayed.
       2) Set R ENG PRIMARY pump switch ON and R ELEC DEMAND selector AUTO.

    B. For HYD PUMP C1 status message displayed:

       Note: If MEL 29-11-02 Center System EMP is applied, no action is required.

       1) Set C2 ELEC pump selector OFF and C1 ELEC pump selector ON until HYD PUMP C1 status message is not displayed.
       2) Set C1 and C2 ELEC pump selectors AUTO.

    C. No further action is required for the following ram fan status messages:
       - RAM FAN L
       - RAM FAN PRIMARY L
       - RAM FAN CONTROL L
       - RAM FAN BACKUP L
       - RAM FAN BACKUP LEFT A
       - RAM FAN BACKUP LEFT B

21-52-12 **Ram Air Fan**

21-52-12-02 **Right Ram Air Fan**

Interval	Installed	Required	Procedure
C	1	0	**(M) (O) (P) (MV)**

May be inoperative provided:
a. Right ram air fan is deactivated.
b. Left ram air fan operates normally.
c. Left ram air fan motor controller operates normally.
d. Left air conditioning pack operates normally.
e. Left cabin air compressors operate normally.
f. L1 VFSG operates normally.
g. R1 VFSG operates normally.
h. L1 cabin air compressor CMSC operates normally.
i. L2 cabin air compressor CMSC operates normally.
j. Center hydraulic pump C1 operates normally.
k. Right PECS aft section operates normally.
l. Right PECS temperature sensor operates normally.
m. APU operates normally.
n. Ground operations are limited to OAT below 49 degrees C.

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MAINTENANCE (M)

Note: 1. For an air conditioning pack to be operating normally, certain items associated with that system must operate normally. See MEL Item 21-51-01 for a list of those items.
2. For a cabin air compressor to be operating normally, certain items must operate normally. See MEL Item 21-52-01 for a list of those items.

Deactivate the right ram air fan (AMM DDG 21-52-12).

1. Visually inspect the ram air fan blades for broken or damaged blades. If missing/damaged blades are found, visually inspect the inside and outside of the ram air outlet header for structural damage.
2. On the MISC SYSTEM CTRLS maintenance page, select RAM FANS RIGHT OFF.

Note: PACK R or PACK MODE R advisory message may be displayed.

UNCONTROLLED IF DOWNLOADED OR PRINTED

OPERATIONS (O)

Note:
1. PACK R or PACK MODE R advisory message may be displayed.
2. The right pack will be off and will not operate normally unless airspeed is sufficient to support ram air duct cooling (approximately 120 knots). The PACK R or PACK MODE R advisory message will be displayed when ram air duct cooling is not available.
3. Before engine start RAM FAN R, HYD PUMP C2 HYD PUMP DEM L, and FUEL PUMP CENTER R status messages may be displayed.
4. Simultaneous engine start is not allowed.
5. ICS galley cooling performance may be degraded during operations if the SCUs are loadshed from the PECS.
6. On takeoff, the PACK ALTITUDE LIMIT caution message may appear anytime after liftoff until 1,000 feet above airport elevation. The message may be displayed for up to 2 minutes. On landing, this message may appear at altitudes less than 1000 feet above airport elevation until touchdown.

1. Ground operations are limited to OAT below 49 degrees C.
2. If cabin temperatures become warmer than desired, consider one or more of the following temporary actions:
   A. Use pre-conditioned air to cool the cabin to 24 degrees C or less an hour before passenger loading.
   B. Set IFE OFF using the IFE Power switch on the Video Control Station.
   C. Select HEAT REDUCTION mode using the Cabin Attendant Panel TEMPERATURE menu.
3. To minimize PECS heating, the following options should be considered:
   A. Set packs OFF and use pre-conditioned air prior to engine start.
   B. Delay closing forward or aft cargo doors until airplane is ready for push back or engine start.
   C. Minimize APU ground operations.
   D. Start APU prior to closing cargo doors.
   E. Minimize time between cargo door closing and first engine start.
   F. Each engine should be started individually at the gate.
4. On POWER ELEC COOLING maintenance page 1, confirm SUPPLY TEMP of right and left PECS loop is 61 degrees C or lower.
5. Start the APU.
6. Start first engine.

   Note: Engine start time will be longer than normal.
7. After first engine start has been completed, on POWER ELEC COOLING maintenance page 1, confirm SUPPLY TEMP of the right and left PECS loop is 61 degrees C or lower.
8. Start second engine.
9. Shutdown APU.
10. Within three minutes after second engine start, perform flight controls freedom of movement check and extend flaps.

11. Check status page for status messages.

    Note: ELEC ENGINE STARTER L2, ELEC ENGINE STARTER R2 and ELEC APU STARTER R status messages may be displayed. No action is required.

    A. For HYD PUMP DEM L status message displayed:
        1) Set L ENG PRIMARY pump switch OFF and L ELEC DEMAND pump selector ON until HYD PUMP DEM L status message is not displayed.
        2) Set L ENG PRIMARY pump switch ON and L ELEC DEMAND pump selector AUTO.

    B. For HYD PUMP C2 status message displayed:

    Note: If MEL 29-11-02 Center System EMP is applied, no action is required.

        1) Set C1 ELEC pump selector OFF and C2 ELEC pump selector ON until HYD PUMP C2 status message is not displayed.
        2) Set C1 and C2 ELEC pump selectors AUTO.

    C. No further action is required for the following ram fan status messages:
        - RAM FAN R
        - RAM FAN PRIMARY R
        - RAM FAN CONTROL R
        - RAM FAN BACKUP R
        - RAM FAN DUAL CONTROL

21-52-12 Ram Air Fan

21-52-12-03 Left Ram Air Fan Motor Controller

Interval	Installed	Required	Procedure
C	1	0	**(M) (O) (P) (MV)**

May be inoperative provided:

a. Right ram air fan operates normally.
b. Right ram air fan motor controller operates normally.
c. L2 cabin air compressor CMSC operates normally.
d. L2 VFSG operates normally.
e. R2 VFSG operates normally.
f. Left ram inlet door or ram air exit door operates normally.

Note: 1. Status message RAM FAN DUAL CONTROL will also be displayed. The airplane must also be dispatched using MEL Item 21-52-12-05. **TWA to TWB**

2. Status message CABIN TEMP CONTROL L will also be displayed.

MAINTENANCE (M)

Note: Dispatch is allowed with INOP RFMC installed if L1 ATRUC does not trip when circuit breaker MC-RAM Fan L CHAN 1 is open. To avoid L1 ATRUC trip, lock with an INOP tag circuit breaker MC-RAM FAN L CHAN 1 to remove L RFMC 28V power. Dispatch is not allowed with the ATRUC tripped. **TWA to TWB**

A VFSG system is considered to be operating normally if its associated status message (ELEC GEN SYS L1, L2, R1 or R2) is not displayed.

An inoperative ram fan motor controller (RFMC) may be removed provided dispatch tool K24002 is installed (AMM DDG 21-52-12).

1. Remove the ram fan motor controller.
   A. Open the following circuit breakers and lock with DO NOT CLOSE tags:
      - MC-RAM FAN L CHAN 1
      - LIQUID CLG PUMP-L1
      - LIQUID CLG PUMP-L2
   B. Open the following contactors and lock with DO NOT CLOSE tags:
      - ATRUC-L1
      - ATRUC-L2
   C. Gain access to the P700 panel.
   D. Disconnect and set swing bolts clear of RFMC mounting brackets.
   E. Remove RFMC from the EE tray.
   F. Install plugs on RFMC liquid connector.

2. Install RFMC dispatch tool.
    A. Remove necessary plugs and caps on the RFMC dispatch tool.
    B. Carefully install dispatch tool in the RFMC E/E tray.
    C. Install swing bolts in dispatch tool mounting brackets and tighten if necessary.
    D Close the following circuit breakers:
        - MC-RAM FAN L CHAN 1
        - LIQUID CLG PUMP-L1
        - LIQUID CLG PUMP-L2

    Note: The following steps are required to reset the ATRUC contactors to AUTO.

    E. Set the following contactors to AUTO:
        - ATRUC-L1
        - ATRUC-L2
    F. Lock the following contactors with DO NOT CLOSE tags:
        - ATRUC-L1
        - ATRUC-L2
    G. Set the following contactors to AUTO:
        - ATRUC-L1
        - ATRUC-L2
    H. Momentarily push the AFT EXT PWR switch on the P5 overhead panel.

OPERATIONS (O)

Note:
1. Engine start time will be longer than normal.
2. PACK MODE L, ELEC MC HYD R, ELEC ENGINE STARTER L1, ELEC ENGINE STARTER R1 may be displayed during engine start.
3. Simultaneous engine start is not allowed.

Use MEL Item 21-52-12-01 (O) procedure.

21-52-12 Ram Air Fan

21-52-12-04 Right Ram Air Fan Motor Controller

Interval	Installed	Required	Procedure
C	1	0	**(M) (O) (P) (MV)**

May be inoperative provided:
a. Left ram air fan operates normally.
b. Left ram air fan motor controller operates normally.
c. R2 cabin air compressor CMSC operates normally.
d. L1 VFSG operates normally.
e. R1 VFSG operates normally.
f. Right ram inlet door or ram air exit door operates normally.

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Note: 1. Status message RAM FAN DUAL CONTROL will also be displayed. The airplane must also be dispatched using MEL Item 21-52-12-05. **TWA to TWB**
2. Status message CABIN TEMP CONTROL R will also be displayed.

MAINTENANCE (M)

Note: Dispatch is allowed with INOP RFMC installed if R1 ATRUC does not trip when circuit breaker MC-RAM FAN R CHAN 1 is open. To avoid R1 ATRUC trip, lock with an INOP tag circuit breaker MC-RAM FAN R CHAN 1 to remove R RFMC 28V power. Dispatch is not allowed with the ATRUC tripped. **TWA to TWB**

A VFSG system is considered to be operating normally if its associated status message (ELEC GEN SYS L1, L2, R1 or R2) is not displayed.

An inoperative ram fan motor controller (RFMC) may be removed provided dispatch tool K24002 is installed (AMM DDG 21-52-12).

1. Remove the ram fan motor controller.
   A. Open the following circuit breakers and lock with DO NOT CLOSE tags:
      - MC-RAM FAN R CHAN 1
      - LIQUID CLG PUMP-R1
      - LIQUID CLG PUMP-R2
   B. Open the following contactors and lock with DO NOT CLOSE tags:
      - ATRUC-R1
      - ATRUC-R2
   C. Gain access to the P800 panel.
   D. Disconnect and set swing bolts clear of RFMC mounting brackets.
   E. Remove RFMC from the EE tray.
   F. Install plugs on RFMC liquid connector.

2. Install RFMC dispatch tool.
   A. Remove necessary plugs and caps on the RFMC dispatch tool.
   B. Carefully install dispatch tool in the RFMC E/E tray.
   C. Install swing bolts in dispatch tool mounting brackets and tighten if necessary.
   D. Close the following circuit breakers:
      - MC-RAM FAN R CHAN 1
      - LIQUID CLG PUMP-R1
      - LIQUID CLG PUMP-R2

   Note: The following steps are required to reset the ATRUC contactors to AUTO.

   E. Set the following contactors to AUTO:
      - ATRUC-R1
      - ATRUC-R2
   F. Lock the following contactors with DO NOT CLOSE tags:
      - ATRUC-R1
      - ATRUC-R2
   G. Set the following contactors to AUTO:
      - ATRUC-R1
      - ATRUC-R2
   H. Momentarily push the AFT EXT PWR switch on the P5 overhead panel.

OPERATIONS (O)

Note: 1. Engine start time will be longer than normal.
2. PACK MODE R, ELEC MC HYD L, ELEC ENGINE STARTER L2, ELEC ENGINE STARTER R2 may be displayed during engine start.
3. Simultaneous engine start is not allowed.

Use MEL Item 21-52-12-02 (O) procedure.

21-52-12 **Ram Air Fan**

21-52-12-05 **Ram Air Fan**

21-52-12-05-01 **787-8** **TQA to TQF**

Interval	Installed	Required	Procedure
C	2	1	**(P) (MV)**

OPERATIONS NOTE

1. If cabin temperatures become warmer than desired, consider one or more of the following temporary actions:
   A. Select IFE system modes designed to reduce cabin heat loads.
      Note: Availability of modes dependent on IFE system installed and airline modifiable options.
   B. Set IFE off using the IFE Power switch on the Video Control Station.
   C. Select HEAT REDUCTION mode using the Cabin Attendant Panel TEMPERATURE menu (adjusts cabin lighting and window shading).

21-52-12 **Ram Air Fan**
21-52-12-05 **Ram Air Fan**
21-52-12-05-02 **787-9** **TWA to TWB**

Interval	Installed	Required	Procedure
C	3	1	**(P) (MV)**

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OPERATIONS NOTE

1. If cabin temperatures become warmer than desired, consider one or more of the following temporary actions:
   A. Select IFE system modes designed to reduce cabin heat loads.
      Note: Availability of modes dependent on IFE system installed and airline modifiable options.
   B. Set IFE OFF using the IFE Power switch on the Video Control Station.
   C. Select HEAT REDUCTION mode using the Cabin Attendant Panel TEMPERATURE menu (adjusts cabin lighting and window shading).

21-52-12 **Ram Air Fan**

21-52-12-06 **Ram Air Fan**

21-52-12-06-01 **787-8** **TQA to TQF**

Interval	Installed	Required	Procedure
C	2	0	**(P)**

May be inop.erative provided:

a. Air conditioning packs operate normally.

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MAINTENANCE NOTE

1. For an air conditioning pack to be operating normally, certain items must operate normally.
   A. See MEL Item 21-51-01 for a list of those items.

21-52-12 **Ram Air Fan**
21-52-12-06 **Ram Air Fan**
21-52-12-06-02 **787-9** **TWA to TWB**

Interval	Installed	Required	Procedure
C	3	0	**(P)**

May be inoperative provided:

a. Air conditioning packs operate normally.

MAINTENANCE NOTE

1. For an air conditioning pack to be operating normally, certain items must operate normally.
   A. See MEL Item 21-51-01 for a list of those items.

21-52-13 Pack Bay Overheat Detection System (ODS)

21-52-13-01 Pack Bay Overheat Detection Channels

Interval	Installed	Required	Procedure
C	2	1	**(P)**

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21-52-13 Pack Bay Overheat Detection System (ODS)

21-52-13-02 Loops

Interval	Installed	Required	Procedure
C	4	2	**(P)**

ODS loops associated with one air conditioning pack may be inoperative provided:

a. Pack is considered inoperative.

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Note: The airplane must also be dispatched using MEL Item 21-52-01.

21-53-01 Integrated Cooling System (ICS)

21-53-01-01 Recirculation Cooling Air System

Interval	Installed	Required	Procedure
C	1	0	**(P) (MV)**

OPERATIONS NOTE

Note: Galley chiller capability may be degraded. Check chiller status on Cabin Attendant Panel or local galley panels.

1. If cabin temperatures become warmer than desired, consider one or more of the following temporary actions:
   A. Select IFE system modes designed to reduce cabin heat loads.
      Note: Availability of modes dependent on IFE system installed and airline modifiable options.
   B. Set IFE off using the IFE Power switch on the Video Control Station.
   C. Select HEAT REDUCTION mode using the Cabin Attendant Panel TEMPERATURE menu (adjusts cabin lighting and window shading).

21-53-01 Integrated Cooling System (ICS)

21-53-01-02 Individual Components

21-53-01-02A System Deactivated

Interval	Installed	Required	Procedure
C	–	0	**(M) (P) (MV)**

Integrated cooling system may be inoperative deactivated.

MAINTENANCE (M)

Note: 1. INTEGRATED CLG SYSTEM status message may be displayed.
2. INTEGRATED CLG RECIRC AIR status message will be displayed.

Deactivate Integrated cooling system (AMM DDG 21-53-01).

1. Locate leaked fluid.
2. Clean leaked fluid from components.
3. Deactivate ICS.
   A. Using a flight deck multi-function display only, open the following circuit breakers and lock with an INOP tag:
      -
        - ICS COMPRESSOR-SCU 1
        - ICS COMPRESSOR-SCU 2
        - ICS COMPRESSOR-SCU 3 (if installed)
        - ICS COMPRESSOR-SCU 4 (if installed)
        - ICS PUMP-1
        - ICS PUMP-2
        - MC 1-ICS COMPRESSOR
        - MC 1-ICS PUMP
        - MC 2-ICS COMPRESSOR
        - MC 2-ICS PUMP
        - MC 3-ICS COMPRESSOR
        - MC 4-ICS COMPRESSOR

   B. Gain access to the following ICS components:
      - ICS PUMP-1
      - ICS PUMP-2

   C. For G4 pump PN 7011038HOX: **TQA to TQF**
      1) Disconnect, cap and stow the electrical connectors to the following ICS components:
         - ICS PUMP-1 (connectors J1 and J2)
         - ICS PUMP-2 (connectors J3 and J4)

TWA to TWB

D. For G5 pump PN 7111038HOX:
   1) Disconnect, cap and stow the electrical connectors to the following ICS components:
      - ICS PUMP-1 (connectors J1 and J2)
      - ICS PUMP-2 (connectors J1 and J2)

4. Replace recirculation filters if exposed to fluid spray.

OPERATIONS NOTE

1. When dispatching with the Integrated Cooling System deactivated, galley chiller capability will be lost.
   A. If cabin temperatures become warmer than desired, consider one or more of the following temporary actions:
      1) Select IFE system modes designed to reduce cabin heat loads.
         Note: Availability of modes dependent on IFE system installed and airline modifiable options.
      2) Set IFE off using the IFE Power switch on the Video Control Station.
      3) Select HEAT REDUCTION mode using the Cabin Attendant Panel TEMPERATURE menu (adjusts cabin lighting and window shading).

21-53-01 Integrated Cooling System (ICS)

21-53-01-02 Individual Components

21-53-01-02B Individual Components Isolated

Interval	Installed	Required	Procedure
C	–	0	**(M) (P) (MV)**

Individual components may be inoperative provided:

a. Leaking components are isolated.

Note: Any portion of system that operates normally may be used.

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MAINTENANCE (M)

Note: The following procedure is only used for ICS components that are leaking fluid. For components that are not leaking, ICS will usually operate normally with no action required. However, inoperative components can be shut off by opening the associated circuit breaker.

Deactivate leaking supplemental cooling unit (SCU) or galley cooling unit (GCU) as required (AMM DDG 21-53-01).

1. Deactivate leaking SCU. An inoperative unit may be removed provided dispatch tool K21018 is installed. SCUs are interchangeable.
   A. For SCU 1:
      1) Using a flight deck multi-function display only, open ICS COMPRESSOR-SCU 1 circuit breaker and lock with an INOP tag.
   B. For SCU 2:
      1) Using a flight deck multi-function display only, open ICS COMPRESSOR-SCU 2 circuit breaker and lock with an INOP tag.
   C. For SCU 3 (if installed):
      1) Using a flight deck multi-function display only, open ICS COMPRESSOR-SCU 3 circuit breaker and lock with an INOP tag.
   D. For SCU 4 (if installed):
      1) Using a flight deck multi-function display only, open ICS COMPRESSOR-SCU 4 circuit breaker and lock with an INOP tag.
   E. Install dispatch tool K21018.

2. For 787-8: **TQA to TQF**
   A. Deactivate leaking GCU. An inoperative galley cooling unit may be removed provided dispatch tool K21018 is installed.
      1) For the GCU on galley 1A:
         a. Using a flight deck multi-function display only, open the following circuit breakers and lock with an INOP tag:
            - GALLEY CLG UNIT DC-DOOR 1 AFT
            - GALLEY CLG UNIT AC-DOOR 1 AFT
      2) For the GCU on galley 1F:
         a. Using a flight deck multi-function display only, open the following circuit breakers and lock with an INOP tag:
            - GALLEY CLG UNIT AC-DOOR 1 FWD
            - GALLEY CLG UNIT DC-DOOR 1 FWD
      3) For the GCU on galley 2A:
         a. Using a flight deck multi-function display only, open the following circuit breakers and lock with an INOP tag:
            - GALLEY CLG UNIT AC-DOOR 2 AFT
            - GALLEY CLG UNIT DC-DOOR 2 AFT
      4) For the GCU on galley 2F:
         a. Using a flight deck multi-function display only, open the following circuit breakers and lock with an INOP tag:
            - GALLEY CLG UNIT AC-DOOR 2 FWD
            - GALLEY CLG UNIT DC-DOOR 2 FWD
      5) For the GCU on galley 2M, 3 or 4C:
         a. Using a flight deck multi-function display only, open the following circuit breakers and lock with an INOP tag:
            - GALLEY CLG UNIT AC-DOOR 2MID/3/4C
            - GALLEY CLG UNIT DC-DOOR 2MID/3/4C
      6) For the GCU on galley 4L:
         a. Using a flight deck multi-function display only, open the following circuit breakers and lock with an INOP tag:
            - GALLEY CLG UNIT AC-DOOR 4L
            - GALLEY CLG UNIT DC-DOOR 4
      7) For the GCU on galley 4R:
         a. Using a flight deck multi-function display only, open the following circuit breakers and lock with an INOP tag:
            - GALLEY CLG UNIT AC-DOOR 4R
            - GALLEY CLG UNIT DC-DOOR 4R
      8) Install dispatch tool K21018.

TWA to TWB

3. For 787-9:
   A. Deactivate leaking GCU. An inoperative galley cooling unit may be removed.
      1) For the GCU on galley 1A:
         a. Using a flight deck multi-function display only, open the following circuit breakers and lock with an INOP tag:
            - GALLEY CLG UNIT AC-DOOR 1 AFT
            - GALLEY CLG UNIT DC-DOOR 1 AFT
      2) For the GCU on galley 1F:
         a. Using a flight deck multi-function display only, open the following circuit breakers and lock with an INOP tag:
            - GALLEY CLG UNIT AC-DOOR 1 FWD
            - GALLEY CLG UNIT DC-DOOR 1 FWD
      3) For the GCU on galley 2A:
         a. Using a flight deck multi-function display only, open the following circuit breakers and lock with an INOP tag:
            - GALLEY CLG UNIT AC-DOOR 2 AFT
            - GALLEY CLG UNIT DC-DOOR 2 AFT
      4) For the GCU on galley 2F:
         a. Using a flight deck multi-function display only, open the following circuit breakers and lock with an INOP tag:
            - GALLEY CLG UNIT AC-DOOR 2 FWD
            - GALLEY CLG UNIT DC-DOOR 2 FWD
      5) For the GCU on galley 2M:
         a. Using a flight deck multi-function display only, open the following circuit breakers and lock with an INOP tag:
            - GALLEY CLG UNIT AC-DOOR 2MID
            - GALLEY CLG UNIT DC-DOOR 2MID
      6) For the GCU on galley 3A:
         a. Using a flight deck multi-function display only, open the following circuit breakers and lock with an INOP tag:
            - GALLEY CLG UNIT AC-DOOR 3 AFT
            - GALLEY CLG UNIT DC-DOOR 3 AFT
      7) For the GCU on galley 3F:
         a. Using a flight deck multi-function display only, open the following circuit breakers and lock with an INOP tag:
            - GALLEY CLG UNIT AC-DOOR 3 FWD
            - GALLEY CLG UNIT DC-DOOR 3 FWD

8) For the GCU on galley 4C:
    a. Using a flight deck multi-function display only, open the following circuit breakers and lock with an INOP tag:
        - GALLEY CLG UNIT DC-DOOR 4 CENTER
        - GALLEY CLG UNIT AC-DOOR 4 CENTER
9) For the GCU on galley 4L:
    a. Using a flight deck multi-function display only, open the following circuit breakers and lock with an INOP tag:
        - GALLEY CLG UNIT AC-DOOR 4L
        - GALLEY CLG UNIT DC-DOOR 4L
10) For the GCU on galley 4R:
    a. Using a flight deck multi-function display only, open the following circuit breakers and lock with an INOP tag:
        - GALLEY CLG UNIT AC-DOOR 4R
        - GALLEY CLG UNIT DC-DOOR 4R
11) Disconnect supply and return hoses from the leaking GCU.
12) Install hose plug assemblies (K21018-6) in GCU supply and return quick disconnects
13) Stow disconnected supply and return hoses.

OPERATIONS NOTE

1. Use MEL Item 21-53-01-01 operations note.

UNCONTROLLED IF DOWNLOADED OR PRINTED

21-53-02 Integrated Cooling System (ICS) Pressure Control/Temperature Sensing System (787-9)

TWA to TWB

Interval	Installed	Required	Procedure
C	1	0	**(P) (MV)**

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OPERATIONS NOTE

1. Use MEL Item 21-53-01-01 operations note.

21-53-03 Integrated Cooling System (ICS) Recirculation Valves

21-53-03-01 Upper Recirculation Valve

Interval	Installed	Required	Procedure
C	1	0	**(M) (P)**

May be inoperative provided:
a. Valve is deactivated in bypass position.
b. Air conditioning packs operate normally.
c. At least one left cabin air compressor operates normally.
d. At least one right cabin air compressor operates normally.

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MAINTENANCE (M)

Note: 1. For an air conditioning pack to be operating normally, certain items associated with that system must operate normally. See MEL Item 21-51-01 for a list of those items.
2. For a cabin air compressor to be operating normally, certain items must operate normally. See MEL Item 21-52-01 for a list of those items.

Deactivate upper recirculation heat exchanger diverter valve in closed/bypass position (AMM DDG 21-53-03).

1. Using a flight deck multi-function display only, open the ICS RECIRC VLV – DIVERTER UPPER circuit breaker and lock with an INOP tag.
2. On INTEGRATED COOLING maintenance page 2, confirm UPPER RECIRC HX DIVERTER VLV POS indicates 0.
3. For UPPER RECIRC HX DIVERTER VLV POS not indicating 0:
   A. Gain access to upper recirculation heat exchanger diverter valve.
   B. Manually turn the open/close knob until the valve is in the CLS/BYP position.

OPERATIONS NOTE

1. Use MEL Item 21-53-01-01 operations note.

21-53-03 Integrated Cooling System (ICS) Recirculation Valves

21-53-03-02 Lower Recirculation Valve

Interval	Installed	Required	Procedure
C	1	0	**(M) (P)**

May be inoperative provided:
a. Valve is deactivated in bypass position.
b. Air conditioning packs operate normally.
c. At least one left cabin air compressor operates normally.
d. At least one right cabin air compressor operates normally.

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MAINTENANCE (M)

Note: 1. For an air conditioning pack to be operating normally, certain items associated with that system must operate normally. See MEL Item 21-51-01 for a list of those items.
2. For a cabin air compressor to be operating normally, certain items must operate normally. See MEL Item 21-52-01 for a list of those items.

Deactivate lower recirculation heat exchanger diverter valve in closed/bypass position (AMM DDG 21-53-03).

1. Using a flight deck multi-function display only, open the ICS RECIRC VLV- LIQUID DIVERTER circuit breaker and lock with an INOP tag.
2. On INTEGRATED COOLING maintenance page 2, confirm LOWER RECIRC HX DIVERTER VLV POS indicates 0.
3. For LOWER RECIRC HX DIVERTER VLV POS not indicating 0:
    A. Gain access to lower recirculation heat exchanger diverter valve.
    B. Manually turn the open/close knob until the valve is in the CLS/BYP position.

OPERATIONS NOTE

1. Use MEL Item 21-53-01-01 operations note.

21-53-04 Integrated Cooling System (ICS) Galley Bypass Valve

TWA to TWB

Interval	Installed	Required	Procedure
C	1	0	**(M) (P)**

May be inoperative deactivated in closed position.

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Note: The Galley Bypass Valve may also be referred to as the Galley Pressure Control Valve.

MAINTENANCE(M)

Deactivate galley bypass valve in closed position (AMM DDG 21-53-04).

1. Using a flight deck multi-function display only, open the ICS GALLEY VLV – PRESS CTRL circuit breaker and lock with an INOP tag
2. Gain access to galley bypass valve.
3. Manually set valve in bypass (CLS/BYP) position. Turn the open/close knob until the galley bypass valve is in CLOSED position.

21-61-01 Flight Deck Zone Trim Valves

Interval	Installed	Required	Procedure
C	2	1	**(M) (P) (MV)**

One may be inoperative provided:

a. Valve is deactivated closed.
b. Opposite trim air pressure regulator valve operates normally.
c. Flight remains within 60 minutes of landing at a suitable airport.

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MAINTENANCE (M)

Deactivate the associated flight deck trim valve closed (AMM DDG 21-61-01).

1. For left flight deck zone trim valve:
    A. Set the left air conditioning pack OFF.
    B. Set the GND TEST selector to ENABLE no less than 30-seconds prior to opening the Pack Control Unit circuit breakers.
    C. Open the following circuit breakers and lock with a DO NOT CLOSE tag:
        - PACK CTRL UNIT-CHAN L1
        - PACK CTRL UNIT-CHAN L2
    D. Gain access to flight deck trim valve.
    E. Disconnect, cap and stow the electrical connector from the left flight deck trim valve.
       Note: The TRIM VALVE FLIGHT DECK L message will be displayed.
    F. Turn the manual open/close knob until the valve position indicator is in the closed position.
    G. Close the following circuit breakers:
        - PACK CTRL UNIT-CHAN L1
        - PACK CTRL UNIT-CHAN L2
    H. Return the GND TEST selector to NORM.
    I. Set the pack as desired.
2. For right flight deck zone trim valve:
    A. Set the right air conditioning pack OFF.
    B. Set the GND TEST selector to ENABLE no less than 30-seconds prior to opening the Pack Control Unit circuit breakers.
    C. Open the following circuit breakers and lock with a DO NOT CLOSE tag:
        - PACK CTRL UNIT-CHAN R1
        - PACK CTRL UNIT-CHAN R2
    D. Gain access to flight deck trim valve.

E. Disconnect, cap and stow the electrical connector from the right flight deck trim valve.

Note: The TRIM VALVE FLIGHT DECK R message will be displayed.

F. Turn the manual open/close knob until the valve position indicator is in the closed position.

G. Close the following circuit breakers:

- PACK CTRL UNIT-CHAN R1
- PACK CTRL UNIT-CHAN R2

H. Return the GND TEST selector to NORM.

I. Set the pack as desired.

OPERATIONS NOTE

1. If cabin or flight deck temperatures become too cool, climbing to a higher altitude will increase the heating capability of the air conditioning system.

21-61-02 Flight Deck Zone Duct Temperature Sensor Systems

Interval	Installed	Required	Procedure
C	2	1	**(M) (P) (MV)**

One may be inoperative provided:

a. Associated flight deck trim zone valve is deactivated closed.
b. Opposite trim air pressure regulator valve operates normally.
c. Opposite flight deck zone trim valve operates normally.
d. Flight remains within 60 minutes of landing at a suitable airport.

MAINTENANCE (M)

Deactivate the associated flight deck trim valve closed (AMM DDG 21-61-02).

1. For left flight deck trim valve:
   A. Set the left air conditioning pack OFF.
   B. Set the GND TEST selector to ENABLE no less than 30-seconds prior to opening the Pack Control Unit circuit breakers.
   C. Open the following circuit breakers and lock with a DO NOT CLOSE tag:
      - PACK CTRL UNIT-CHAN L1
      - PACK CTRL UNIT-CHAN L2
   D. Gain access to flight deck trim.
   E. Disconnect, cap and stow the electrical connector from the left flight deck trim valve.
      Note: The TRIM VALVE FLIGHT DECK L message will be displayed.
   F. Turn the manual open/close knob until the valve position indicator is in the closed position.
   G. Close the following circuit breakers:
      - PACK CTRL UNIT-CHAN L1
      - PACK CTRL UNIT-CHAN L2
   H. Return the GND TEST selector to NORM.
   I. Set the pack as desired.
2. For right flight deck trim valve:
   A. Set the right air conditioning pack OFF.
   B. Set the GND TEST selector to ENABLE no less than 30-seconds prior to opening the Pack Control Unit circuit breakers.
   C. Open the following circuit breakers and lock with a DO NOT CLOSE tag:
      - PACK CTRL UNIT-CHAN R1
      - PACK CTRL UNIT-CHAN R2
   D. Gain access to flight deck trim valve.

E. Disconnect, cap and stow the electrical connector from the right flight deck trim valve.

  Note: The TRIM VALVE FLIGHT DECK R message will be displayed.

F. Turn the manual open/close knob until the valve position indicator is in the closed position.

G. Close the following circuit breakers:

  - PACK CTRL UNIT-CHAN R1
  - PACK CTRL UNIT-CHAN R2

H. Return the GND TEST selector to NORM.

I. Set the pack as desired.

OPERATIONS NOTE

1. If cabin or flight deck temperatures become too cool, climbing to a higher altitude will increase the heating capability of the air conditioning system.

21-61-03 Flight Deck Zone Air Temperature Sensor System

Interval	Installed	Required	Procedure
C	1	0	**(P)**

May be inoperative provided:

a. At least one air conditioning pack operates normally.
b. Trim air pressure regulator valve associated with operating pack operates normally.
c. Flight deck zone duct temperature sensor system associated with operating pack operates normally.
d. Flight deck zone trim valve associated with operating pack operates normally.

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MAINTENANCE NOTE

Note: For an air conditioning pack to be operating normally, certain items associated with that system must operate normally.

1. See MEL Item 21-51-01 for a list of those items.

21-61-04 Cabin Zone Trim Valves

Interval	Installed	Required	Procedure
C	4	2	**(M) (P) (MV)**

May be inoperative provided:

a. Valve is deactivated closed.
b. Opposite trim air pressure regulator valve operates normally.
c. Flight remains within 60 minutes of landing at a suitable airport.

MAINTENANCE (M)

Note: Cabin zone trim valves and their associated trim air PRSOVs are shown below.

Cabin Zone Trim Valve	Associated Trim Air Pressure Regulator Valve
TRIM VALVE ZONE B, D	TRIM AIR PRSOV L
TRIM VALVE ZONE A, C	TRIM AIR PRSOV R

Deactivate the inoperative cabin zone trim valve closed (AMM DDG 21-61-04).

1. For cabin zones B or D:
   - A. Set left air conditioning pack OFF.
   - B. Set the GND TEST selector to ENABLE no less than 30-seconds prior to opening the Pack Control Unit circuit breakers.
   - C. Open the following circuit breakers and lock with a DO NOT CLOSE tag:
     - PACK CTRL UNIT-CHAN L1
     - PACK CTRL UNIT-CHAN L2
   - D. Gain access to the zone trim valve.
   - E. Disconnect, cap and stow the electrical connector for the applicable zone trim valve.
   - F. Turn the open/close knob until the valve is in the closed position.
   - G. Close the following circuit breakers:
     - PACK CTRL UNIT-CHAN L1
     - PACK CTRL UNIT-CHAN L2
   - H. Return the GND TEST selector to NORM.
   - I. Set pack as desired.

2. For cabin zones A or C:
   A. Set right air conditioning pack OFF.
   B. Set the GND TEST selector to ENABLE no less than 30-seconds prior to opening the Pack Control Unit circuit breakers.
   C. Open the following circuit breakers and lock with a DO NOT CLOSE tag:
      - PACK CTRL UNIT-CHAN R1
      - PACK CTRL UNIT-CHAN R2
   D. Gain access to the zone trim valve.
   E. Disconnect, cap and stow the electrical connector for the applicable zone trim valve.
   F. Turn the open/close knob until the valve is in the closed position.
   G. Close the following circuit breakers:
      - PACK CTRL UNIT-CHAN R1
      - PACK CTRL UNIT-CHAN R2
   H. Return the GND TEST selector to NORM.
   I. Set pack as desired.

OPERATIONS NOTE

1. Trim air is not available in the cabin zone associated with the deactivated trim air valve.
2. If cabin or flight deck temperatures become too cool, climbing to a higher altitude will increase the heating capability of the air conditioning system

21-61-05 Cabin Zone Duct Temperature Sensor Systems

21-61-05-01 Zones A1 and B1

Interval	Installed	Required	Procedure
C	2	0	**(M) (P)**

May be inoperative provided:
a. Associated cabin zone heater is deactivated.

MAINTENANCE (M)

Deactivate the inoperative cabin zone heater (AMM DDG 21-61-05).

1. For zone A1 temperature sensor inoperative:
   A. Using a flight deck multi-function display only, open circuit breaker HEATER-CABIN ZONE A and lock with an INOP tag.

      Note: The ZONE HEATER A1 status message will be displayed.
2. For zone B1 temperature sensor inoperative:
   A. Using a flight deck multi-function display only, open the following circuit breakers and lock with an INOP tag:
      - HEATER-CABIN ZONE B ELEMENT 1
      - HEATER-CABIN ZONE B ELEMENT 2

      Note: The ZONE HEATER B1 status message will be displayed.

21-61-05 Cabin Zone Duct Temperature Sensor Systems

21-61-05-02 Zones A2, B2, C, and D

21-61-05-02A Modulating Valve Deactivated Closed

Interval	Installed	Required	Procedure
C	4	2	**(M) (P) (MV)**

May be inoperative provided:

a. Associated zone trim valve is deactivated closed.

b. Opposite trim air pressure regulator valve operates normally.

c. Flight remains within 60 minutes of landing at a suitable airport.

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MAINTENANCE (M)

Note: Cabin zone duct temperature sensors and their associated trim air pressure regulator valves are shown below.

Cabin Zone Duct Temperature Sensor	Associated Trim Air Pressure Regulator Valve
DUCT SENSOR ZONE B2, D	TRIM AIR PRSOV L
DUCT SENSOR ZONE A2, C	TRIM AIR PRSOV R

Deactivate the associated cabin zone trim air valve closed (AMM DDG 21-61-05).

1. For cabin zones B2 or D:
   A. Set left air conditioning pack OFF.
   B. Set the GND TEST selector to ENABLE no less than 30-seconds prior to opening the Pack Control Unit circuit breakers.
   C. Open the following circuit breakers and lock with a DO NOT CLOSE tag:
      - PACK CTRL UNIT-CHAN L1
      - PACK CTRL UNIT-CHAN L2
   D. Gain access to the zone trim valve.
   E. Disconnect, cap and stow the electrical connector for the applicable zone trim valve.

      Note: The TRIM VALVE ZONE B and/or TRIM VALVE ZONE D status message will be displayed.
   F. Turn the open/close knob until the valve is in the closed position.
   G. Close the following circuit breakers:
      - PACK CTRL UNIT-CHAN L1
      - PACK CTRL UNIT-CHAN L2
   H. Return the GND TEST selector to NORM.
   I. Set pack as desired.

2. For cabin zones A2 or C:
    - A. Set right air conditioning pack OFF.
    - B. Set the GND TEST selector to ENABLE no less than 30-seconds prior to opening the Pack Control Unit circuit breakers.
    - C. Open the following circuit breakers and lock with a DO NOT CLOSE tag:
        - PACK CTRL UNIT-CHAN R1
        - PACK CTRL UNIT-CHAN R2
    - D. Gain access to the zone trim valve.
    - E. Disconnect, cap and stow the electrical connector for the applicable zone trim valve.

      Note: The TRIM VALVE ZONE A and/or TRIM VALVE ZONE C status message will be displayed.
    - F. Turn the open/close knob until the valve is in the closed position.
    - G. Close the following circuit breakers:
        - PACK CTRL UNIT-CHAN R1
        - PACK CTRL UNIT-CHAN R2
    - H. Return the GND TEST selector to NORM.
    - I. Set pack as desired.

OPERATIONS NOTE

1. Use MEL Item 21-61-04 operations note.

21-61-05 Cabin Zone Duct Temperature Sensor Systems

21-61-05-02 Zones A2, B2, C, and D

21-61-05-02B Trim Air Switch Remains Off

Interval	Installed	Required	Procedure
C	4	2	**(P) (MV)**

May be inoperative provided:

a. Opposite trim air pressure regulator valve operates normally.
b. For sensor A2 or C inoperative, right trim air switch remains off.
c. For sensor B2 or D inoperative, left trim air switch remains off.
d. Flight remains within 60 minutes of landing at a suitable airport.

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MAINTENANCE NOTE

1. Cabin zone duct temperature sensors and their associated trim air pressure regulator valves are shown below.

Cabin Zone Duct Temperature Sensor	Associated Trim Air PRSOV
DUCT SENSOR ZONE B2, D	TRIM AIR PRSOV L
DUCT SENSOR ZONE A2, C	TRIM AIR PRSOV R

OPERATIONS NOTE

1. Use MEL Item 21-61-04 operations note.

21-62-01 Trim Air Pressure Regulator Valves

Interval	Installed	Required	Procedure
C	2	1	**(M) (O) (P) (MV)**

One may be inoperative provided:

a. Valve is deactivated closed.
b. Opposite flight deck zone trim valve operates normally.
c. Flight remains within 60 minutes of landing at a suitable airport.

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MAINTENANCE (M)

Deactivate the inoperative trim air pressure regulator valve closed (AMM DDG 21-62-01).

1. For left trim air pressure regulator valve:
   A. Set the left air conditioning pack OFF.
   B. Set the GND TEST selector to ENABLE no less than 30-seconds prior to opening the Pack Control Unit circuit breakers.
   C. Open the following circuit breakers and lock with a DO NOT CLOSE tag:
      - PACK CTRL UNIT-CHAN L1
      - PACK CTRL UNIT-CHAN L2
   D. Gain access to the trim air PRSOV.
   E. Disconnect, cap and stow the electrical connector to the pressure regulator valve.
   F. Turn the open/close knob until the valve is in the closed position.
   G. Close the following circuit breakers.
      - PACK CTRL UNIT-CHAN L1
      - PACK CTRL UNIT-CHAN L2
   H. Return the GND TEST selector to NORM.
   I. Set pack as desired.
2. For right trim air pressure regulator valve:
   A. Set the right air conditioning pack OFF.
   B. Set the GND TEST selector to ENABLE no less than 30-seconds prior to opening the Pack Control Unit circuit breakers.
   C. Open the following circuit breakers and lock with a DO NOT CLOSE tag:
      - PACK CTRL UNIT-CHAN R1
      - PACK CTRL UNIT-CHAN R2
   D. Gain access to the trim air pressure regulator valve.

E. Disconnect, cap and stow the electrical connector to the pressure regulator valve.
F. Turn the open/close knob until the valve is in the closed position.
G. Close the following circuit breakers.
  - PACK CTRL UNIT-CHAN R1
  - PACK CTRL UNIT-CHAN R2

H. Return the GND TEST selector to NORM.
I. Set pack as desired.

OPERATIONS (O)

Note: The AIR synoptic may not agree with the position of the inoperative trim air pressure regulator valve.

1. Set associated TRIM AIR switch OFF.
2. To minimize adjusting the cabin temperature selection, request flight attendants to allow additional time for cabin temperature stabilization.
3. If cabin or flight deck temperatures become too cool, climbing to a higher altitude will increase the heating capability of the air conditioning system.

21-62-01 Trim Air Pressure Regulator Valves

21-62-01-01 TRIM AIR Switch FAULT Lights

Interval	Installed	Required	Procedure
C	2	0	**(P)**

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21-62-01 Trim Air Pressure Regulator Valves

21-62-01-02 TRIM AIR Switch ON Lights

Interval	Installed	Required	Procedure
C	2	0	**(P)**

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21-62-02 Trim Air Pressure Sensor Systems

Interval	Installed	Required	Procedure
C	2	0	**(P)**

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21-71-02 Overhead Flight Crew Rest (OFCR) Humidification System

Interval	Installed	Required	Procedure
D	1	0	**(M) (P)**

May be inoperative provided:

a. Water supply valve is deactivated closed.

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MAINTENANCE (M)

Deactivate the OFCR humidification system water supply valve closed (AMM DDG 21-71-02).

1. On AIR DISTRIBUTION EICAS maintenance page 2, confirm flight crew rest HUMID S/O VLV indicates CLSD.
2. Using a flight deck multi-function display only, open circuit breaker HUMIDIFIER-FLT CREW REST and lock with an INOP tag.
3. If HUMID S/O VLV did not indicate CLSD in step 1:
   A. Gain access to the humidifier shutoff valve.
   B. Turn the manual open/close knob to set the valve in the closed position.

21-71-03 Overhead Flight Attendant Rest (OFAR) Humidification System

Interval	Installed	Required	Procedure
D	1	0	**(M) (P)**

May be inoperative provided:

a. Water supply valve is deactivated closed.

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MAINTENANCE (M)

Deactivate the OFAR humidification system water supply valve closed (AMM DDG 21-71-03).

1. On AIR DISTRIBUTION EICAS maintenance page 2, confirm attendant rest HUMID S/O VLV indicates CLSD.
2. Using a flight deck multi-function display only, open circuit breaker HUMIDIFIER-ATTEND CREW REST and lock with an INOP tag.
3. If HUMID S/O VLV did not indicate CLSD in step 1:
   - A. Gain access to the humidifier shutoff valve.
   - B. Turn the manual open/close knob to set the valve in the closed position.

21-72-01 Zonal Dryer Systems

Interval	Installed	Required	Procedure
C	2	0	**(M) (P)**

May be inoperative deactivated.

MAINTENANCE (M)

Deactivate the inoperative zonal dryer system (AMM DDG 21-72-01).

1. For forward zonal dryer, using a flight deck multi-function display only, open the DEHUMIDIFIER AC-FWD circuit breaker and lock with an INOP tag.
2. For aft zonal dryer, using a flight deck multi-function display only, open the DEHUMIDIFIER AC-AFT circuit breaker and lock with an INOP tag.

21-73-01 Ozone Converters

Interval	Installed	Required	Procedure
C	2	0	**(P)**

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21-81-01 Power Electronics Cooling System (PECS) Aft Section

Interval	Installed	Required	Procedure
C	2	1	**(M) (P) (MV)**

One may be inoperative provided:

a. Leak is verified to be in aft section of the loop.
b. Associated isolation valve is deactivated closed.
c. Associated fluid level is verified to be adequate.
d. Associated ram air fan operates normally.

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Note: The aft section of the PECS loop is that part of the loop downstream of the isolation valve and associated with the SCUs and the lav/galley ventilation heat exchanger.

MAINTENANCE (M)

Verify that leak is in aft section of the loop and confirm isolation valve is deactivated closed (AMM DDG 21-81-01).

Note: The aft section of the PECS loop is that part of the loop downstream of the isolation valve and associated with the SCUs and the lav/galley ventilation heat exchanger.

1. Verify leak is in aft section of PECS loop.
    A. If the caution message LIQUID COOLING L/R does not appear, the leak has been isolated and is in the aft section of the PECS loop.
    B. Locate leaked fluid.
    C. Clean any fluid and fluid residue on any airplane structure, components or fluid lines.
2. Using a flight deck multi-function display only, open the following circuit breakers and lock with an INOP tag:
    A. For leak in left loop:
        - LIQUID CLG SOV VLV-L
    B. For leak in right loop:
        - LIQUID CLG SOV VLV-R

    Note: 1. Opening the circuit breaker will cause the associated LIQUID CLG PRESS SNSR L/R to appear. The airplane must also be dispatched using MEL Item 21-81-04.
    2. The LIQUID COOLING ISLN VLV L or R status message will be displayed.
3. On POWER ELEC COOLING maintenance page 1, confirm associated isolation valve state is ISOLATED.
4. If valve state is not ISOLATED, gain access to supply shutoff valve.
    A. Turn the open/close knob until the valve is in the close position.
    B. Verify associated PECS loop fluid level is adequate, or service as required.

OPERATIONS NOTE

1. Closing the isolation valve will deactivate the SCUs associated with the affected PECS loop and may degrade GCM and recirculation cooling air performance.

21-81-02 Power Electronics Cooling System (PECS) Fluid Level Sensor Systems

Interval	Installed	Required	Procedure
C	2	1	**(M) (P) (MV)**

One may be inoperative provided:

a. Associated PECS loop fluid level is verified to be within limits every five flight days.
b. Associated PECS liquid ICS/SCU supply pressure sensor operates normally.
c. Associated PECS liquid cooling temperature sensor operates normally.

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MAINTENANCE (M)

Verify correct fluid level in associated loop every five flight days (AMM DDG 21-81-02).

1. Gain access to the PECS pump package.
2. Connect BMS3-42 Coolant Top-Off Pack (CTOP) to reservoir top-off port.
3. Fill reservoir until CTOP bypasses.
4. Reverse CTOP flow to remove fluid.
5. Remove fluid based on fluid temperature per the following table:

Fluid Removal to Set Fluid Level		
Fluid Temperature		Full Strokes with CTOP
Degrees F	Degrees C	
40	4	50
50	10	48
60	16	45
70	21	42
80	27	40
90	32	37
100	38	34
110	43	30
120	49	27
130	54	23
140	60	19
150	66	15
160	71	11
165	74	9
170	77	7
175	79	5
180	82	0

6. Clean any spilled fluid.

21-81-03 Power Electronics Cooling System (PECS) Liquid ICS/SCU Supply Shutoff Valve

Interval	Installed	Required	Procedure
C	2	1	**(M) (P)**

One may be inoperative deactivated open.

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Note: The airplane must also be dispatched using MEL Item 21-81-04.

MAINTENANCE (M)

Confirm inoperative PECS ICS/SCU supply shutoff (isolation) valve is deactivated in open position (AMM DDG 21-81-03).

1. Using a flight deck multi-function display only, open the following circuit breakers and lock with an INOP tag:
   A. For the left loop:
      - LIQUID CLG SOV VLV-L

   B. For the right loop:
      - LIQUID CLG SOV VLV-R

   Note: Opening the circuit breaker will cause the associated LIQUID CLG PRESS SNSR L/R to appear. The airplane must also be dispatched using MEL Item 21-81-04.
2. On POWER ELEC COOLING maintenance page 1, confirm associated isolation valve state is NORMAL.
3. If valve state is not NORMAL:
   A. Gain access to supply shutoff valve.
   B. Turn the open/close knob until the valve is in the open position.

21-81-04 Power Electronics Cooling System (PECS) Liquid ICS/SCU Supply Pressure Sensor Systems

Interval	Installed	Required	Procedure
C	2	1	**(P)**

One may be inoperative provided:

a. Associated PECS fluid level sensor system operates normally.

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21-81-05 Power Electronics Cooling System (PECS) Pumps

Interval	Installed	Required	Procedure
C	4	3	**(M) (P)**

One may be inoperative deactivated.

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MAINTENANCE (M)

Deactivate inoperative pump (AMM DDG 21-81-05).

1. For left loop:
    A. For pump 1:
        1) Using a flight deck multi-function display only, open the following circuit breakers and lock with an INOP tag:
            - MC LIQUID CLG PUMP-L1
            - MC LIQUID CLG PUMP-L1-SECONDARY
            - LIQUID CLG PUMP-L1
        2) Gain access to left liquid cooling pump 1.
        3) Disconnect, cap and stow the electrical connectors J1 and J2 to left liquid cooling pump 1.
    B. For pump 2:
        1) Using a flight deck multi-function display only, open the following circuit breakers and lock with an INOP tag:
            - MC LIQUID CLG PUMP-L2
            - MC LIQUID CLG PUMP-L2-SECONDARY
            - LIQUID CLG PUMP-L2
        2) Gain access to left liquid cooling pump 2.
        3) Disconnect, cap and stow the electrical connectors J3 and J4 to left liquid cooling pump 2.
            - Electrical connectors J3 and J4 **TQA to TQE**
            - Electrical connectors J1 and J2 **TQF, TWA, B**

2. For right loop:
   A. For pump 1:
      1) Using a flight deck multi-function display only, open the following circuit breakers and lock with an INOP tag:
         - MC LIQUID CLG PUMP-R1
         - MC LIQUID CLG PUMP-R1-SECONDARY
         - LIQUID CLG PUMP-R1
      2) Gain access to right liquid cooling pump 1.
      3) Disconnect, cap and stow the electrical connectors J1 and J2 to right liquid cooling pump 1.
   B. For pump 2:
      1) Using a flight deck multi-function display only, open the following circuit breakers and lock with an INOP tag:
         - MC LIQUID CLG PUMP-R2
         - MC LIQUID CLG PUMP-R2-SECONDARY
         - LIQUID CLG PUMP-R2
      2) Gain access to right liquid cooling pump 2.
      3) Disconnect, cap and stow the electrical connectors J3 and J4 to right liquid cooling pump 2.
         - Electrical connectors J3 and J4 **TQA to TQE**
         - Electrical connectors J1 and J2 **TQF, TWA, B**

21-81-06 Power Electronics Cooling System (PECS) Temperature Control Systems

21-81-06-01 Liquid Cooling Temperature Control Valves

Interval	Installed	Required	Procedure
C	2	1	**(M) (P)**

One may be inoperative provided:

a. Associated temperature control valve is deactivated open.

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MAINTENANCE (M)

Deactivate inoperative PECS temperature control valve in open position (AMM DDG 21-81-06).

1. For left loop:
   - A. Using a flight deck multi-function display only, open circuit breaker LIQUID CLG TEMP CTRL VLV-L and lock with an INOP tag.
   - B. Gain access to temperature control valve.
   - C. Disconnect, cap and stow the electrical connector to left liquid cooling temperature control valve.

     Note: The LIQUID CLG TEMP CTRL VLV L status message will be displayed.
   - D. Turn the open/close knob until the valve is in the OPN position.
2. For right loop:
   - A. Using a flight deck multi-function display only, open circuit breaker LIQUID CLG TEMP CTRL VLV-R and lock with an INOP tag.
   - B. Gain access to temperature control valve.
   - C. Disconnect, cap and stow the electrical connector to right liquid cooling temperature control valve.

     Note: The LIQUID CLG TEMP CTRL VLV R status message will be displayed.
   - D. Turn the open/close knob until the valve is in the OPN position.

21-81-06 Power Electronics Cooling System (PECS) Temperature Control Systems

21-81-06-02 Liquid Cooling Temperature Sensors

Interval	Installed	Required	Procedure
C	2	1	**(M) (P)**

One may be inoperative provided:

a. Associated temperature control valve is deactivated open.

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MAINTENANCE (M)

Deactivate inoperative PECS temperature control valve in open position and confirm PECS fluid level is adequate (AMM DDG 21-81-06).

1. Secure temperature control valve in open position:
   A. For left loop:
      1) Using a flight deck multi-function display only, open circuit breaker LIQUID CLG TEMP CTRL VLV-L and lock with an INOP tag.
      2) Gain access to temperature control valve.
      3) Disconnect, cap and stow the electrical connector to left liquid cooling temperature control valve.
         Note: The LIQUID CLG TEMP CTRL VLV L status message will be displayed.
      4) Turn the open/close knob until the valve is in the OPN position.
   B. For right loop:
      1) Using a flight deck multi-function display only, open circuit breaker LIQUID CLG TEMP CTRL VLV-R and lock with an INOP tag.
      2) Gain access to temperature control valve.
      3) Disconnect, cap and stow the electrical connector to right liquid cooling temperature control valve.
         Note: The LIQUID CLG TEMP CTRL VLV R status message will be displayed.
      4) Turn the open/close knob until the valve is in the OPN position.
2. Confirm PECS fluid level is adequate:
   A. On ELEC SYS IND & CTRL (ESIC) maintenance page, confirm ATRUCs are closed.
   B. On MISC SYSTEM CTRLS (MSC) maintenance page, confirm left and right ram fans are operating.
   C. Confirm both PECS loops have been operating for at least 10 minutes.
   D. On POWER ELEC COOLING maintenance page, confirm opposite PECS loop has reached steady temperature.
      Note: If starting PECS loop from a cold or hot soak condition, time to reach steady temperature could be longer.

E. On POWER ELEC COOLING maintenance page, confirm RESERVOIR POSITION 1 and RESERVOIR POSITION 2 for the affected PECS loop are between 4 and 6 inches (10.2 and 15.2 centimeters).

F. Service PECS loop as required.

UNCONTROLLED IF DOWNLOADED OR PRINTED

21-81-07 Power Electronics Cooling System (PECS) Liquid Pump Filter

Interval	Installed	Required	Procedure
C	2	0	**(P)**

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Table of Contents

ATA 22 AUTOFLIGHT ATA 22-1
Table Of Contents ATA 22-1
22-11-01 Autoflight Function ATA 22-3
22-11-02 Autopilot Backdrive Actuator Systems ATA 22-4
22-11-02A One Inoperative ATA 22-4
22-11-02B Two or Three Inoperative ATA 22-5
22-11-03 Flight Director Systems ATA 22-6
22-11-04 Mode Control Panel Windows ATA 22-7
22-11-04-01 Airspeed (IAS-MACH) ATA 22-7
22-11-04-02 Heading (HDG-TRK) ATA 22-8
22-11-04-03 Vertical Speed (V/S-FPA) ATA 22-9
22-11-04-04 Altitude (ALTITUDE) ATA 22-10
22-11-04-05 Uplink (UL) Windows ATA 22-11
22-11-04-05A Procedures Require Use ATA 22-11
22-11-04-05B Procedures Do Not Require Use ATA 22-12
22-11-04-06 Window Lighting ATA 22-13
22-11-05 Mode Control Panel Selectors ATA 22-14
22-11-05-01 V/S - FPA Selector (DOWN, UP) ATA 22-14
22-11-05-02 BANK LIMIT Selector (AUTO, 5, 10, 15, 20, 25, 30) ATA 22-15
22-11-05-03 Altitude Increment Selector (AUTO, 1000) ATA 22-16
22-11-05-04 Selector Push Functions ATA 22-17
22-11-05-04-01 IAS - MACH ATA 22-17
22-11-05-04-02 HDG - TRK SEL ATA 22-18
22-11-05-04-03 ALTITUDE ATA 22-19
22-11-06 Mode Control Panel Switches ATA 22-20
22-11-06-01 A/P Engage Switches ATA 22-20
22-11-06-01A Autopilot Used ATA 22-20
22-11-06-01B Autopilot Not Used ATA 22-21

22-11-06-02 Autothrottle Arm Switches (A/T ARM L, R) ATA 22-22
22-11-06-02A Autothrottle Operating ATA 22-22
22-11-06-02B Autothrottle Inoperative ATA 22-23
22-11-06-03 A/T Engage Switch ATA 22-24
22-11-06-04 F/D Switches ATA 22-25
22-11-06-05 IAS - MACH Reference Switch ATA 22-26
22-11-06-06 HDG - TRK Reference Switch ATA 22-27
22-11-06-07 V/S - FPA Reference Switch ATA 22-28
22-11-06-08 APP Switch ATA 22-29
22-11-06-09 CLB CON, LNAV, VNAV, FLCH, VS/FPA, Heading/Track HOLD, Altitude HOLD, and LOC/FAC Switches ATA 22-30
22-11-06-10 Arm/Engage Lights ATA 22-31
22-11-06-11 Uplink (UL) XFR Switches ATA 22-32
22-11-06-11A Procedures Require Use ATA 22-32
22-11-06-11B Procedures Do Not Require Use ATA 22-33
22-11-07 Automatic Landing System (Autoland) ATA 22-34
22-11-07-01 Triple Channel Autoland (LAND 3) ATA 22-35
22-11-08 Control Wheel Autopilot Disconnect Switches ATA 22-36
22-11-08 A Autopilot Not Used Below 1,500 ft AGL ATA 22-36
22-11-08B Autopilot Not Used ATA 22-37
22-11-09 Takeoff/Go-Around (TO/GA) Switches ATA 22-38
22-11-09A One Inoperative ATA 22-38
22-11-09B Both Inoperative ATA 22-39
22-31-01 Autothrottle System ATA 22-40
22-31-02 Autothrottle Servo Motors ATA 22-41
22-31-02A One Inoperative ATA 22-41
22-31-02B Both Inoperative ATA 22-42
22-31-03 Autothrottle Disconnect Switches ATA 22-43
22-31-03A One Inoperative ATA 22-43
22-31-03B Both Inoperative ATA 22-44
22-31-04 Takeoff Thrust Disagree Monitor ATA 22-45

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22-11-01 Autoflight Function

Interval	Installed	Required	Procedure
C	1	0	**(M) (P)**

May be dispatched with AUTOFLIGHT FUNCTION faults provided:

a. The A/P DISENGAGE bar is verified to operate normally.

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MAINTENANCE (M)

Verify that the A/P DISENGAGE bar operates normally (AMM DDG 22-11-01).

1. With flaps up, engage the autopilot.
2. Disconnect the autopilot with the A/P DISENGAGE bar.
3. Confirm that the autopilot disconnects, the AUTOPILOT DISC warning message is displayed, the aural is activated, and at least one master warning light is illuminated.

OPERATIONS NOTE

1. The autopilot system has lost redundancy but operates normally.

22-11-02 Autopilot Backdrive Actuator Systems

22-11-02A One Inoperative

Interval	Installed	Required	Procedure
C	3	2	**(M) (O) (P) (MV)**

One may be inoperative provided:
a. Associated backdrive actuator is deactivated.
b. Autopilot disconnect warning indications are verified to operate normally before each departure.

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Note: For wheel backdrive inoperative, the Bank Angle Protection function will be inoperative and the status message BANK ANGLE PROTECT will be displayed. The airplane must also be dispatched using MEL Item 27-02-01.

MAINTENANCE (M)

Deactivate the associated backdrive actuator, and verify that autopilot disconnect indications operate normally prior to each departure (AMM DDG 22-11-02).

1. Deactivate the associated backdrive actuator:
    A. For column backdrive actuator inoperative:
        1) Using a flight deck multi-function display only, open circuit breaker BACKDRIVE ACTR-R COLUMN and lock with an INOP tag.
    B. For pedal backdrive actuator inoperative:
        1) Using a flight deck multi-function display only, open circuit breaker BACKDRIVE ACTR-R PEDAL and lock with an INOP tag.
    C. For wheel backdrive actuator inoperative:
        1) Using a flight deck multi-function display only, open circuit breaker BACKDRIVE ACTR-R CTRL WHEEL and lock with an INOP tag.
2. Prior to each departure, confirm that autopilot disconnect indications operate normally:
    A. With flaps up, engage the autopilot.
    B. Disconnect the autopilot with either autopilot disconnect switch.
    C. Confirm that the AUTOPILOT DISC warning message is displayed, the aural is activated, and at least one master warning light is illuminated.

OPERATIONS (O)

1. Autopilot override and disconnect are affected as follows:
    A. Force override of the autopilot requires much less force than normal.
    B. For wheel or pedal backdrive inoperative:
        1) If the autopilot is disconnected during the autoland runway alignment maneuver, expect a minor flight path change due to mismatch of the controls and control surfaces.

22-11-02 Autopilot Backdrive Actuator Systems

22-11-02B Two or Three Inoperative

Interval	Installed	Required	Procedure
C	3	0	**(M) (O) (P) (MV)**

May be inoperative provided:

a. Associated backdrive actuator is deactivated.

b. Autopilot disconnect warning indications are verified to operate normally before each departure.

* * *

Note: For wheel backdrive inoperative, the Bank Angle Protection function will be inoperative and the status message BANK ANGLE PROTECT will be displayed. The airplane must also be dispatched using MEL Item 27-02-01.

MAINTENANCE (M)

Deactivate the associated backdrive actuator, and verify that autopilot disconnect indications operate normally prior to each departure (AMM DDG 22-11-02).

1. Deactivate the associated backdrive actuator:
   A. For column backdrive actuator inoperative:
      1) Using a flight deck multi-function display only, open circuit breaker BACKDRIVE ACTR-R COLUMN and lock with an INOP tag.
   B. For pedal backdrive actuator inoperative:
      1) Using a flight deck multi-function display only, open circuit breaker BACKDRIVE ACTR-R PEDAL and lock with an INOP tag.
   C. For wheel backdrive actuator inoperative:
      1) Using a flight deck multi-function display only, open circuit breaker BACKDRIVE ACTR-R CTRL WHEEL and lock with an INOP tag.
2. Prior to each departure, confirm that autopilot disconnect indications operate normally:
   A. With flaps up, engage the autopilot.
   B. Disconnect the autopilot with either autopilot disconnect switch.
   C. Confirm that the AUTOPILOT DISC warning message is displayed, the aural is activated, and at least one master warning light is illuminated.

OPERATIONS (O)

1. Autopilot override and disconnect are affected as follows:
   A. Force override of the autopilot requires much less force than normal.
   B. For wheel or pedal backdrive inoperative:
      1) If the autopilot is disconnected during the autoland runway alignment maneuver, expect a minor flight path change due to mismatch of the controls and control surfaces

22-11-03 Flight Director Systems

Interval	Installed	Required	Procedure
C	2	0	**(P)**

May be inoperative provided:

a. Procedures do not require their use.

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22-11-04 Mode Control Panel Windows

22-11-04-01 Airspeed (IAS-MACH)

Interval	Installed	Required	Procedure
C	1	0	**(P)**

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22-11-04 Mode Control Panel Windows

22-11-04-02 Heading (HDG-TRK)

Interval	Installed	Required	Procedure
C	1	0	**(P)**

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22-11-04 Mode Control Panel Windows

22-11-04-03 Vertical Speed (V/S-FPA)

Interval	Installed	Required	Procedure
C	1	0	**(P)**

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22-11-04 Mode Control Panel Windows

22-11-04-04 Altitude (ALTITUDE)

Interval	Installed	Required	Procedure
C	1	0	**(P)**

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22-11-04 Mode Control Panel Windows

22-11-04-05 Uplink (UL) Windows

22-11-04-05A Procedures Require Use

Interval	Installed	Required	Procedure
C	3	0	**(O) (P)**

OPERATIONS (O)

1. Manual selection of values is required for MCP window associated with inoperative pre-select window.

22-11-04 Mode Control Panel Windows
22-11-04-05 Uplink (UL) Windows
22-11-04-05B Procedures Do Not Require Use

Interval	Installed	Required	Procedure
D	3	0	**(P)**

May be inoperative provided:

a. Procedures do not require their use.

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22-11-04 Mode Control Panel Windows

22-11-04-06 Window Lighting

Interval	Installed	Required	Procedure
B	1	0	**(P)**

May be inoperative provided:

1. MCP uplink (UL) windows are considered inoperative.

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Note: MCP Uplink (UL) window parameters will not be visible. The airplane must also be dispatched using MEL Item 22-11-04-05.

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22-11-05 Mode Control Panel Selectors

22-11-05-01 V/S - FPA Selector (DOWN, UP)

Interval	Installed	Required	Procedure
C	1	0	**(P)**

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22-11-05 Mode Control Panel Selectors

22-11-05-02 BANK LIMIT Selector (AUTO, 5, 10, 15, 20, 25, 30)

Interval	Installed	Required	Procedure
C	1	0	**(P)**

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22-11-05 Mode Control Panel Selectors

22-11-05-03 Altitude Increment Selector (AUTO, 1000)

Interval	Installed	Required	Procedure
C	1	0	**(P)**

May be inoperative provided:

a. AUTO position operates normally.

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22-11-05 Mode Control Panel Selectors

22-11-05-04 Selector Push Functions

22-11-05-04-01 IAS - MACH

Interval	Installed	Required	Procedure
C	1	0	**(P)**

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22-11-05 Mode Control Panel Selectors
22-11-05-04 Selector Push Functions
22-11-05-04-02 HDG - TRK SEL

Interval	Installed	Required	Procedure
C	1	0	**(P)**

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22-11-05 Mode Control Panel Selectors
22-11-05-04 Selector Push Functions
22-11-05-04-03 ALTITUDE

Interval	Installed	Required	Procedure
C	1	0	**(P)**

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22-11-06 Mode Control Panel Switches

22-11-06-01 A/P Engage Switches

22-11-06-01A Autopilot Used

Interval	Installed	Required	Procedure
C	2	1	**(P)**

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22-11-06 Mode Control Panel Switches

22-11-06-01 A/P Engage Switches

22-11-06-01B Autopilot Not Used

Interval	Installed	Required	Procedure
B	2	0	**(P)**

May be inoperative provided:

a. Approach minimums do not require use of the autopilots.
b. Number of flight segments and segment duration is acceptable to flight crew.
c. Enroute operations do not require use of the autopilots.

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22-11-06 Mode Control Panel Switches

22-11-06-02 Autothrottle Arm Switches (A/T ARM L, R)

22-11-06-02A Autothrottle Operating

Interval	Installed	Required	Procedure
C	2	1	**(M) (O) (P)**

One may be inoperative provided:

a. Associated servo motor is deactivated.
b. EEC normal mode operates normally.
c. Both thrust levers are manually set for takeoff and go-around thrust.

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MAINTENANCE (M)

Deactivate the associated autothrottle servo motor (AMM DDG 22-11-06).

1. For L autothrottle servo motor:
    A. Using a flight deck multi-function display only, open circuit breaker A/T SERVO-L and lock with an INOP tag.
2. For R autothrottle servo motor:
    A. Using a flight deck multi-function display only, open circuit breaker A/T SERVO-R and lock with an INOP tag.

OPERATIONS (O)

1. The AUTOTHROTTLE L or R advisory message will be displayed.
2. The autothrottle cannot be engaged on the ground.
3. Set both thrust levers manually for takeoff and go-around.
4. For an inoperative switch failed to the armed state, the TPR/N1 trim function will operate normally. Provided the operative autothrottle arm switch is positioned to A/T ARM.

Note: The AUTOTHROTTLE DISC caution message will be annunciated if the flight crew selects FLCH, VNAV, or TO/GA. Pressing the autothrottle disconnect switch will clear the caution.

5. For an inoperative switch failed to the off state, autothrottle functionality is available in flight for the operative autothrottle.

22-11-06 Mode Control Panel Switches
22-11-06-02 Autothrottle Arm Switches (A/T ARM L, R)
22-11-06-02B Autothrottle Inoperative

Interval	Installed	Required	Procedure
C	2	0	**(P) (MV)**

May be inoperative provided:

a. EEC normal mode operates normally.
b. Approach minimums do not require autothrottle use.
c. Flight remains within 180 minutes of landing at a suitable airport.

OPERATIONS NOTE

1. Autothrottle is inoperative.

22-11-06 Mode Control Panel Switches

22-11-06-03 A/T Engage Switch

Interval	Installed	Required	Procedure
C	1	0	**(P) (MV)**

May be inoperative provided:

a. EEC normal mode operates normally.
b. Approach minimums do not require autothrottle use.
c. Flight remains within 180 minutes of landing at a suitable airport.

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OPERATIONS NOTE

1. Autothrottle is inoperative.

22-11-06 Mode Control Panel Switches

22-11-06-04 F/D Switches

Interval	Installed	Required	Procedure
C	2	0	**(P)**

May be inoperative provided:
a. Procedures do not require flight director use.

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22-11-06 Mode Control Panel Switches

22-11-06-05 IAS - MACH Reference Switch

Interval	Installed	Required	Procedure
C	1	0	**(P)**

May be inoperative provided:

a. IAS is displayed in associated window.

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MAINTENANCE NOTE

1. For MACH displayed in the associated MCP window, the default IAS display can be restored by cycling power to the mode control panel.
   A. Open the following circuit breakers:
      - MODE CTRL PNL-L
      - MODE CTRL PNL-R
   B. Close the following circuit breakers:
      - MODE CTRL PNL-L
      - MODE CTRL PNL-R

22-11-06 Mode Control Panel Switches

22-11-06-06 HDG - TRK Reference Switch

Interval	Installed	Required	Procedure
C	1	0	**(P)**

May be inoperative provided:

a. HDG is displayed in associated window.

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MAINTENANCE NOTE

1. For TRK displayed in the associated MCP window, the default HDG display can be restored by cycling power to the mode control panel.
   A. Open the following circuit breakers:
      - MODE CTRL PNL-L
      - MODE CTRL PNL-R
   B. Close the following circuit breakers:
      - MODE CTRL PNL-L
      - MODE CTRL PNL-R

22-11-06 Mode Control Panel Switches

22-11-06-07 V/S - FPA Reference Switch

Interval	Installed	Required	Procedure
C	1	0	**(P)**

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MAINTENANCE NOTE

1. For FPA displayed in the associated MCP window, the default V/S display can be restored by cycling power to the mode control panel.
   A. Open the following circuit breakers:
      - MODE CTRL PNL-L
      - MODE CTRL PNL-R
   B. Close the following circuit breakers:
      - MODE CTRL PNL-L
      - MODE CTRL PNL-R

22-11-06 Mode Control Panel Switches

22-11-06-08 APP Switch

Interval	Installed	Required	Procedure
C	1	0	**(P)**

May be inoperative provided:

a. Approach minimums do not require use of autopilot or flight director.

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22-11-06 Mode Control Panel Switches

22-11-06-09 CLB CON, LNAV, VNAV, FLCH, VS/FPA, Heading/Track HOLD, Altitude HOLD, and LOC/FAC Switches

Interval	Installed	Required	Procedure
C	8	0	**(P)**

May be inoperative provided:
a. Enroute operations do not require their use.

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22-11-06 Mode Control Panel Switches

22-11-06-10 Arm/Engage Lights

Interval	Installed	Required	Procedure
C	11	0	**(P)**

May be inoperative provided:

a. The associated mode indications on both PFDs operate normally.

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22-11-06 **Mode Control Panel Switches**

22-11-06-11 **Uplink (UL) XFR Switches**

22-11-06-11A **Procedures Require Use**

Interval	Installed	Required	Procedure
C	3	0	**(O) (P)**

OPERATIONS (O)

1. Manual selection of values is required for MCP window associated with inoperative uplink XFR switch.

22-11-06 **Mode Control Panel Switches**
22-11-06-11 **Uplink (UL) XFR Switches**

22-11-06-11B **Procedures Do Not Require Use**

Interval	Installed	Required	Procedure
D	3	0	**(P)**

May be inoperative provided:
a. Procedures do not require their use.

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22-11-07 Automatic Landing System (Autoland)

Interval	Installed	Required	Procedure
C	1	0	**(P)**

May be inoperative provided:

a. Approach minimums do not require its use.

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22-11-07 **Automatic Landing System (Autoland)**

22-11-07-01 **Triple Channel Autoland (LAND 3)**

Interval	Installed	Required	Procedure
C	1	0	**(P)**

May be inoperative provided:

a. Approach minimums do not require its use.

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22-11-08 Control Wheel Autopilot Disconnect Switches

22-11-08A Autopilot Not Used Below 1,500 ft AGL

Interval	Installed	Required	Procedure
C	2	1	**(P)**

One may be inoperative provided:

a. Autopilot is not used below 1,500 feet AGL.

b. Approach minimums do not require the use of the autopilot.

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22-11-08 Control Wheel Autopilot Disconnect Switches

22-11-08B Autopilot Not Used

Interval	Installed	Required	Procedure
B	2	0	**(P)**

May be inoperative provided:
a. Autopilot is not used.
b. Approach minimums do not require use of the autopilot.
c. Number of flight segments and segment duration is acceptable to flight crew.
d. Enroute operations do not require use of the autopilot.

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22-11-09 Takeoff/Go-Around (TO/GA) Switches

22-11-09A One Inoperative

Interval	Installed	Required	Procedure
C	2	1	**(P)**

May be inoperative provided:

a. Approach minimums do not require its use.

OPERATIONS NOTE

1. The NO LAND 3 or NO AUTOLAND advisory message may be displayed.

22-11-09 **Takeoff/Go-Around (TO/GA) Switches**

22-11-09B **Both Inoperative**

Interval	Installed	Required	Procedure
C	2	0	**(P)**

May be inoperative provided:
a. EEC normal mode operates normally.
b. Both thrust levers are operated manually for takeoff and go-around.
c. Autopilot and flight director are not used below 500 feet AGL or MDA, whichever is higher.

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OPERATIONS NOTE

1. The NO LAND 3 or NO AUTOLAND advisory message may be displayed.
2. Flight director go-around and windshear guidance are not available with both TO/GA switches inoperative.
3. For flight management inertial only navigation mode (GPS not available), RWY/POS position update will not occur at the start of takeoff roll. DME/ DME or VOR/DME updating will begin when airspeed exceeds 100 kts.

22-31-01 Autothrottle System

Interval	Installed	Required	Procedure
C	1	0	**(P) (MV)**

May be inoperative provided:

a. EEC normal mode operates normally.
b. Approach minimums do not require its use.
c. Flight remains within 180 minutes of landing at a suitable airport.

Note: Any mode which operates normally may be used.

OPERATIONS NOTE

1. Some failure modes of the autothrottle system may cause the thrust reference/target indications to be inoperative.

22-31-02 Autothrottle Servo Motors

22-31-02A One Inoperative

Interval	Installed	Required	Procedure
C	2	1	**(M) (O) (P)**

One may be inoperative provided:

a. Associated servo motor is deactivated.
b. EEC normal mode operates normally.
c. Both thrust levers are manually set for takeoff and go-around thrust.

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MAINTENANCE (M)

Deactivate the inoperative autothrottle servo motor (AMM DDG 22-31-02).

1. For L autothrottle servo motor:
    A. Using a flight deck multi-function display only, open circuit breaker A/T SERVO-L and lock with an INOP tag.
2. For R autothrottle servo motor:
    A. Using a flight deck multi-function display only, open circuit breaker A/T SERVO-R and lock with an INOP tag.

OPERATIONS (O)

Note:
1. The AUTOTHROTTLE L or R advisory message will be displayed.
2. The autothrottle cannot be engaged on the ground.
3. The TPR/N1 trim function of the EEC will operate normally, provided both autothrottle arm switches are positioned to A/T ARM.
4. For both autothrottle arm switches positioned to A/T ARM, the AUTOTHROTTLE DISC caution will be annunciated if the flight crew selects FLCH, VNAV, or TO/GA. Pressing the autothrottle disconnect switch will clear the caution.

1. For takeoff:
    A. Set both autothrottle switches to A/T ARM.
    B. Set both thrust levers manually.
2. After takeoff, if desired set the deactivated autothrottle servo motor A/T ARM switch OFF to restore functionality of the operative autothrottle servo motor.
3. For go-around, set both thrust levers manually.

22-31-02 Autothrottle Servo Motors

22-31-02B Both Inoperative

Interval	Installed	Required	Procedure
C	2	0	**(M) (O) (P) (MV)**

May be inoperative provided:

a. Both servo motors are deactivated.
b. EEC normal mode operates normally.
c. Approach minimums do not require use of the autothrottles.
d. Flight remains within 180 minutes of landing at a suitable airport.

* * *

MAINTENANCE (M)

Deactivate the inoperative autothrottle servo motors (AMM DDG 22-31-02).

1. Using a flight deck multi-function display only, open circuit breaker A/T SERVO-L and lock with an INOP tag.
2. Using a flight deck multi-function display only, open circuit breaker A/T SERVO-R and lock with an INOP tag.

OPERATIONS (O)

Note:
1. The AUTOTHROTTLE L and R advisory messages will be displayed.
2. The TPR/N1 trim function of the EEC will operate normally, provided both autothrottle arm switches are position to A/T ARM.
3. For both autothrottle arm switches positioned to A/T ARM, the AUTOTHROTTLE DISC caution will be annunciated if the flight crew selects FLCH, VNAV, or TO/GA. Pressing the autothrottle disconnect switch will clear the caution.

1. The flight must remain within 180 minutes of landing at a suitable airport.
2. For takeoff, set both autothrottle switches to A/T ARM.

22-31-03 Autothrottle Disconnect Switches

22-31-03A One Inoperative

Interval	Installed	Required	Procedure
C	2	1	**(P)**

One may be inoperative provided:

a. Both A/T ARM switches operate normally.

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22-31-03 **Autothrottle Disconnect Switches**

22-31-03B **Both Inoperative**

Interval	Installed	Required	Procedure
C	2	0	**(P) (MV)**

May be inoperative provided:

a. EEC normal mode operates normally.
b. Autothrottles are not armed.
c. Approach minimums do not require use of autothrottles.
d. Flight remains within 180 minutes of landing at a suitable airport.

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22-31-04 Takeoff Thrust Disagree Monitor

Interval	Installed	Required	Procedure
C	1	0	**(O) (P) (MV)**

May be dispatched with a T/O THRUST DISAGREE fault.

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OPERATIONS (O)

Note: Derated or reduced thrust takeoffs are not allowed.

1. Use full rated thrust for takeoff.
2. Confirm that maximum TPR (amber) indications agree with reference/target (green) indications prior to each takeoff.

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Table of Contents

ATA 23 COMMUNICATIONS ATA 23-1
Table Of Contents ATA 23-1
23-11-01 High Frequency (HF) Communication Systems ATA 23-4
23-11-01A SATCOM Operates Normally ATA 23-4
23-11-01A-01 Procedures Require Use, Two LRCS Required ATA 23-4
23-11-01A-02 Procedures Require Use, Two LRCS Not Required ATA 23-5
23-11-01B Procedures Do Not Require Use ATA 23-6
23-11-01-01 HF Datalink ATA 23-7
23-11-01-01A Procedures Require Use ATA 23-7
23-11-01-01B Procedures Do Not Require Use ATA 23-8
23-12-01 VHF Communications Systems ATA 23-9
23-12-01-01 VHF Datalink ATA 23-10
23-12-01-01A Procedures Require Use ATA 23-10
23-12-01-01B Procedures Do Not Require Use ATA 23-11
23-15-01 Satellite Communication (SATCOM) Systems ATA 23-12
23-15-01A Procedures Require Use ATA 23-12
23-15-01B Procedures Do Not Require Its Use ATA 23-13
23-15-01-01 SATCOM Datalink ATA 23-14
23-15-01-01A Procedures Require Use ATA 23-14
23-15-01-01B Procedures Do Not Require Use ATA 23-15
23-21-01 Selective Call Function (SELCAL) ATA 23-16
23-21-01 A Procedures Require Use ATA 23-16
23-21-01B Procedures Do Not Require Its Use ATA 23-17
23-21-01-01 Channels ATA 23-18
23-21-01-01A Procedures Require Use ATA 23-18
23-21-01-01B Procedures Do Not Require Its Use ATA 23-19
23-24-01 Tuning And Control Panels (TCP) ATA 23-20
23-24-01-01 Left TCP Backup Navigation Function ATA 23-21

23-24-01-02 Switch Lights, Key Lights, OFF Lights ATA 23-22

23-24-02 Emergency Locator Transmitter (ELT) (Fixed) ATA 23-23
23-24-02A Inoperative ATA 23-23
23-24-02B Missing ATA 23-24
23-24-02-01 Remote ELT Switch ATA 23-25

23-24-03 Low Frequency Underwater Locating Device (LF-ULD) ATA 23-26
23-24-03A No Overwater Flight ATA 23-26
23-24-03B Overwater Flight ATA 23-27

23-27-01 Communication Management System (Datalink) ATA 23-28
23-27-01A One Inoperative ATA 23-28
23-27-01B Both Inoperative, Procedures Require Use ATA 23-29
23-27-01C Both Inoperative, Procedures Do Not Require Its Use ATA 23-30
23-27-01-01 ACPT/CANC/RJCT Switch Lights ATA 23-31

23-41-01 Service Interphone System ATA 23-32
23-41-01-01 Nose Gear Jack ATA 23-32
23-41-01-01A Nose Gear Flight Interphone Jack Operates Normally ATA 23-32
23-41-01-01B Nose Gear Flight Interphone Jack Inoperative ATA 23-33
23-41-01-02 Left Main Gear Jack ATA 23-34

23-51-01 Audio Control Panels (ACP) ATA 23-35
23-51-01-01 First Officer's Audio Control Panel ATA 23-35
23-51-01-02 First Observer’s Audio Control Panel ATA 23-36
23-51-01-03 Network Channels ATA 23-37
23-51-01-03A Captain and First Officer ATA 23-37
23-51-01-03B First Observer ATA 23-38
23-51-01-04 MIC/CALL Lights ATA 23-39
23-51-01-04A Captain and First Officer ATA 23-39
23-51-01-04B First Observer ATA 23-40
23-51-01-05 Receiver Lights ATA 23-41

23-51-01-05A Captain and First Officer ATA 23-41
23-51-01-05B First Observer ATA 23-42
23-51-02 Flight Deck Hand Microphones ATA 23-43
23-51-02A Associated Boom Microphone Operates Normally ATA 23-43
23-51-02B Procedures Do Not Require Its Use ATA 23-44
23-51-03 Flight Deck Headsets/Headphones ATA 23-45
23-51-03-01 Headset Boom Microphones ATA 23-46
23-51-03-02 Headset Earphones/Headphones ATA 23-47
23-51-04 Microphone (MIC)/Interphone Switches ATA 23-48
23-51-04-01 Control Wheel MIC/Interphone Switches ATA 23-48
23-51-04-02 Flight Crew Audio Control Panel MIC/Interphone Switches ATA 23-49
23-51-04-03 Glareshield MIC Switches ATA 23-50
23-51-04-03A Microphone Switch Deactivated ATA 23-50
23-51-04-03B CLOCK/MAP/MIC Switch Panel Deactivated ATA 23-51
23-51-05 Flight Deck Speaker Systems ATA 23-52
23-51-06 Audio Gateway Units ATA 23-53
23-51-07 Flight Deck Analog Audio Communication ATA 23-54
23-75-01 Flight Deck Door Visual Surveillance Systems ATA 23-55
23-75-01-01 Video Surveillance System ATA 23-55
23-75-01-01A Procedures Require Use ATA 23-55
23-75-01-01B Flight Deck Door Viewing Port Operates Normally ATA 23-56
23-75-01-01C Procedures Do Not Require Its Use ATA 23-57
23-75-01-02 Flight Deck Door Viewing Port ATA 23-58
23-75-01-02A Procedures Require Use ATA 23-58
23-75-01-02B Surveillance System Operates Normally ATA 23-59
23-93-01 Pilots’ Overhead Panel Control/Communication Channels ATA 23-60

23-11-01 High Frequency (HF) Communication Systems

23-11-01A SATCOM Operates Normally

23-11-01A-01 Procedures Require Use, Two LRCS Required

Interval	Installed	Required	Procedure
C	2	1	**(O) (P) (MV)**

One may be inoperative while conducting operations that require two LRCS provided:

a. Aircraft SATVOICE system operates normally.
b. SATVOICE services are available as a LRCS over the intended route of flight.
c. The ICAO flight plan is updated (as required) to notify ATC of the communications equipment status of the aircraft.

Note: SATCOM is to be used only as a backup to normal HF communications.

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MAINTENANCE NOTE

If desired, the inoperative HF radio may be deactivated.

1. For left HF radio inoperative, using a flight deck multi-function display only, open circuit breaker HF-L and lock with an INOP tag.
2. For right HF radio inoperative, using a flight deck multi-function display only, open circuit breaker HF-R and lock with an INOP tag.

OPERATIONS (O)

1. Ensure SATCOM voice is available over the intended route of flight.
2. Confirm with BKKOP and/or refer to relevant Aeronautical Information Publication (AIP) for ATC SATVOICE calling codes.

23-11-01 **High Frequency (HF) Communication Systems**
23-11-01A **SATCOM Operates Normally**

23-11-01A-02 **Procedures Require Use, Two LRCS Not Required**

Interval	Installed	Required	Procedure
C	2	1	**(P) (MV)**

One may be inoperative provided:

a. Flight is not dispatched for operations that require two LRCS.

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MAINTENANCE NOTE

If desired, the inoperative HF radio may be deactivated.

1. For left HF radio inoperative, using a flight deck multi-function display only, open circuit breaker HF-L and lock with an INOP tag.
2. For right HF radio inoperative, using a flight deck multi-function display only, open circuit breaker HF-R and lock with an INOP tag.

23-11-01 High Frequency (HF) Communication Systems

23-11-01B Procedures Do Not Require Use

Interval	Installed	Required	Procedure
D	2	0	**(P) (MV)**

Both may be inoperative provided:

a. Flight is not dispatched for operations that require two LRCS.
b. HF voice communication is not required for the intended route.

MAINTENANCE NOTE

If desired, the inoperative HF radio may be deactivated.

1. For left HF radio inoperative, using a flight deck multi-function display only, open circuit breaker HF-L and lock with an INOP tag.
2. For right HF radio inoperative, using a flight deck multi-function display only, open circuit breaker HF-R and lock with an INOP tag.

23-11-01 High Frequency (HF) Communication Systems

23-11-01-01 HF Datalink

23-11-01-01A Procedures Require Use

Interval	Installed	Required	Procedure
C	1	0	**(O) (P)**

May be inoperative provided:

a. SATCOM datalink operates normally.

b. SATCOM coverage is available over the intended route of flight.

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OPERATIONS (O)

1. Ensure SATCOM datalink is available over the intended route of flight.
2. Use SATCOM for datalink communication.

23-11-01 **High Frequency (HF) Communication Systems**
23-11-01-01 **HF Datalink**

23-11-01-01B **Procedures Do Not Require Use**

Interval	Installed	Required	Procedure
D	1	0	**(P)**

May be inoperative provided:
a. Procedures do not require its use.

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23-12-01 VHF Communications Systems

Interval	Installed	Required	Procedure
D	3	2	**(P) (MV)**

One may be inoperative provided:

a. Left VHF radio operates normally.
b. Use of ACARS is prohibited if the center VHF radio is required for ATC communication.

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23-12-01 VHF Communications Systems

23-12-01-01 VHF Datalink

23-12-01-01A Procedures Require Use

Interval	Installed	Required	Procedure
C	1	0	**(O) (P)**

May be inoperative provided:

a. VHF voice, SATCOM or HF datalink operate normally.

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OPERATIONS (O)

1. Use VHF voice, SATCOM or HF for communication.

23-12-01 VHF Communications Systems
23-12-01-01 VHF Datalink
23-12-01-01B Procedures Do Not Require Use

Interval	Installed	Required	Procedure
D	1	0	**(P)**

May be inoperative provided:

a. Procedures do not require its use.

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23-15-01 Satellite Communication (SATCOM) Systems

23-15-01A Procedures Require Use

Interval	Installed	Required	Procedure
C	1	0	**(O) (P) (MV)**

May be inoperative provided:

a. Flight remains within 180 minutes of landing at a suitable airport.
b. For operations requiring two LRCS, two HF systems operate normally.

Note: The airplane does not meet the RCP240 and RSP 180 specifications. Operations in certain oceanic/remote areas implementing RCP 240 and RSP 180 will not receive reduced horizontal aircraft separations.

OPERATIONS (O)

1. Use alternate means of communication (HF, VHF).
2. The flight must remain with 180 minutes of landing at a suitable airport.

23-15-01 **Satellite Communication (SATCOM) Systems**

23-15-01B **Procedures Do Not Require Its Use**

Interval	Installed	Required	Procedure
D	1	0	**(P) (MV)**

May be inoperative provided:
a. Procedures do not require its use.

Note: The airplane does not meet the RCP 240 and RSP 180 specifications. Operations in certain oceanic/remote areas implementing RCP 240 and RSP 180 will not receive reduced horizontal aircraft separations.

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23-15-01 Satellite Communication (SATCOM) Systems

23-15-01-01 SATCOM Datalink

23-15-01-01A Procedures Require Use

Interval	Installed	Required	Procedure
C	1	0	**(O) (P) (MV)**

May be inoperative provided:

a. SATCOM voice, VHF or HF datalink operate normally.

b. For operations requiring two LRCS, two HF systems, or one HF system and SATCOM voice operate normally.

Note: The airplane does not meet the RCP 240 and RSP 180 specifications. Operations in certain oceanic/remote areas implementing RCP 240 and RSP 180 will not receive reduced horizontal aircraft separations.

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OPERATIONS (O)

1. Use SATCOM voice, VHF or HF for communication.

23-15-01 Satellite Communication (SATCOM) Systems

23-15-01-01 SATCOM Datalink

23-15-01-01B Procedures Do Not Require Use

Interval	Installed	Required	Procedure
D	1	0	**(P) (MV)**

May be inoperative provided:

a. Procedures do not require its use.

Note: The airplane does not meet the RCP 240 and RSP 180 specifications. Operations in certain oceanic/remote areas implementing RCP 240 and RSP 180 will not receive reduced horizontal aircraft separations.

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23-21-01 Selective Call Function (SELCAL)

23-21-01A Procedures Require Use

Interval	Installed	Required	Procedure
C	1	0	**(O) (P) (MV)**

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OPERATIONS (O)

1. Either LP or RP must use Radio Listening Watch procedure.
2. Address "SELCAL INOP" into the ICAO flight plan remarks.

23-21-01 Selective Call Function (SELCAL)

23-21-01B Procedures Do Not Require Its Use

Interval	Installed	Required	Procedure
D	1	0	**(P)**

May be inoperative provided:

a. Procedures do not require its use.

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23-21-01 Selective Call Function (SELCAL)

23-21-01-01 Channels

23-21-01-01A Procedures Require Use

Interval	Installed	Required	Procedure
C	5	0	**(O) (P) (MV)**

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OPERATIONS (O)

1. Address "SELCAL INOP" into the ICAO flight plan remarks.

23-21-01 Selective Call Function (SELCAL)
23-21-01-01 Channels
23-21-01-01B Procedures Do Not Require Its Use

Interval	Installed	Required	Procedure
D	5	0	**(P)**

May be inoperative provided:

a. Procedures do not require its use.

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23-24-01 Tuning and Control Panels (TCP)

Interval	Installed	Required	Procedure
C	3	2	**(P)**

One may be inoperative provided:

a. Left tuning and control panel operates normally.
b. Inoperative tuning and control panel remains OFF.

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MAINTENANCE NOTE

1. The tuning and control panels are interchangeable.
2. When the TCP S/W CONFIG status message is displayed, the associated tuning and control panel must be considered inoperative.

23-24-01 Tuning and Control Panels (TCP)

23-24-01-01 Left TCP Backup Navigation Function

Interval	Installed	Required	Procedure
C	1	0	**(P)**

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23-24-01 Tuning and Control Panels (TCP)

23-24-01-02 Switch Lights, Key Lights, OFF Lights

Interval	Installed	Required	Procedure
C	105	0	**(P)**

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23-24-02 Emergency Locator Transmitter (ELT) (Fixed)

23-24-02A Inoperative

Interval	Installed	Required	Procedure
A	1	0	**(M) (P) (MV)**

May be inoperative provided:

a. System is deactivated.

b. Repair or replacement is made within 6 flights or 25 flight hours, whichever occurs first.

* * *

MAINTENANCE (M)

Deactivate ELT (AMM DDG 23-24-02).

1. Gain access to the ELT in the passenger compartment ceiling.
2. Position the switch on the ELT unit to OFF.

OPERATIONS NOTE

1. Batteries used in Survival Type emergency locator transmitter must be replaced when the transmitter has been in use. The new expiration date for replacing the battery must be legibly marked on the outside of the transmitter.

23-24-02 **Emergency Locator Transmitter (ELT) (Fixed)**

23-24-02B **Missing**

Interval	Installed	Required	Procedure
A	1	0	**(M) (P) (MV)**

May be missing provided:

a. Placard stating “ELT not installed” is placed in view of the pilot.
b. Repair or replacement is made within 6 flights or 25 flight hours, whichever occurs first.

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MAINTENANCE(M)

Placard "ELT not installed" and place it in view of the piliot (AMM DDG 23-24-02).

OPERATIONS NOTE

1. Batteries used in Survival Type emergency locator transmitter must be replaced when the transmitter has been in use. The new expiration date for replacing the battery must be legibly marked on the outside of the transmitter.

23-24-02 Emergency Locator Transmitter (ELT) (Fixed)

23-24-02-01 Remote ELT Switch

Interval	Installed	Required	Procedure
D	1	0	**(M)**

May be inoperative provided:
a. Remote ELT Switch is deactivated.
b. ELT switch is placed in the ARMED mode.

MAINTENANCE(M)

Deactivate the inoperative remote ELT switch and place the ELT switch in ARMED mode (AMM DDG 23-24-02).

23-24-03 Low Frequency Underwater Locating Device (LF-ULD)

23-24-03A No Overwater Flight

Interval	Installed	Required	Procedure
D	1	0	**(P)**

May be inoperative or missing provided:

a. Operations at a distance of more than 180 NM from the shore are not conducted.

23-24-03 Low Frequency Underwater Locating Device (LF-ULD)

23-24-03B Overwater Flight

Interval	Installed	Required	Procedure
C	1	0	**(P)**

May be inoperative or missing provided:

a. The fixed ELT is operative.

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23-27-01 Communication Management System (Datalink)

23-27-01A One Inoperative

Interval	Installed	Required	Procedure
C	2	1	**(P)**

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23-27-01 **Communication Management System (Datalink)**

23-27-01B **Both Inoperative, Procedures Require Use**

Interval	Installed	Required	Procedure
C	2	0	**(O) (P) (MV)**

May be inoperative provided:

a. Flight remains within 180 minutes of landing at a suitable airport.

Note: The airplane does not meet the RCP 240 and RSP 180 specifications. Operations in certain oceanic/remote areas implementing RCP 240 and RSP 180 will not receive reduced horizontal aircraft separations.

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OPERATIONS (O)

1. Use VHF, SATCOM or HF voice for communication.
2. The flight must remain within 180 minutes of landing at a suitable airport.

23-27-01 Communication Management System (Datalink)

23-27-01C Both Inoperative, Procedures Do Not Require Its Use

Interval	Installed	Required	Procedure
D	2	0	**(P) (MV)**

May be inoperative provided:
a. Procedures do not require its use.

Note: The airplane does not meet the RCP 240 and RSP 180 specifications. Operations in certain oceanic/remote areas implementing RCP 240 and RSP 180 will not receive reduced horizontal aircraft separations.

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23-27-01 Communication Management System (Datalink)

23-27-01-01 ACPT/CANC/RJCT Switch Lights

Interval	Installed	Required	Procedure
C	6	0	**(P)**

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23-41-01 Service Interphone System

23-41-01-01 Nose Gear Jack

23-41-01-01A Nose Gear Flight Interphone Jack Operates Normally

Interval	Installed	Required	Procedure
C	1	0	**(O) (P)**

Service interphone flight deck to ground/ground to flight deck function may be inoperative provided:

a. Nose gear flight interphone jack operates normally.

* * *

OPERATIONS (O)

1. Use flight interphone for communication with ground crew during ground handling operations.

23-41-01 **Service Interphone System**
23-41-01-01 **Nose Gear Jack**

23-41-01-01B **Nose Gear Flight Interphone Jack Inoperative**

Interval	Installed	Required	Procedure
B	1	0	**(O) (P)**

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OPERATIONS (O)

1. Use hand signals for communication with ground crew. These procedures may include any kind of 2-way handheld radio communication i.e. Walkie Talkie, mobile phone.

23-41-01 **Service Interphone System**

23-41-01-02 **Left Main Gear Jack**

Interval	Installed	Required	Procedure
D	1	0	**(P)**

May be inoperative provided:

a. Procedures do not require its use.

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23-51-01 Audio Control Panels (ACP)

23-51-01-01 First Officer's Audio Control Panel

Interval	Installed	Required	Procedure
C	1	0	**(O) (P)**

First officer’s audio control panel may be inoperative provided:
a. First observer’s audio control panel operates normally.

Note: Any function that operates normally may be used.

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Note: See MEL Item 25-11-02 for equipment associated with the first observer seat.

MAINTENANCE NOTE

1. The audio control panels are interchangeable.

OPERATIONS (O)

1. Set the aft aisle stand OBS AUDIO selector to F/O.

Note: If airplane is powered only by standby power or battery power, the flight interphone will not operate.

23-51-01 Audio Control Panels (ACP)

23-51-01-02 First Observer's Audio Control Panel

Interval	Installed	Required	Procedure
A	1	0	**(P)**

May be inoperative provided:

a. First Officer's audio control panel operates normally.

b. Repairs are made within two flight days.

Note: Any function that operates normally may be used.

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Note: See MEL Item 25-11-02 for other equipment associated with the first observer seat.

MAINTENANCE NOTE

1. The audio control panels are interchangeable.

23-51-01 Audio Control Panels (ACP)

23-51-01-03 Network Channels

23-51-01-03A Captain and First Officer

Interval	Installed	Required	Procedure
C	4	2	**(P)**

One may be inoperative for each audio control panel.

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23-51-01 **Audio Control Panels (ACP)**
23-51-01-03 **Network Channels**

23-51-01-03B **First Observer**

Interval	Installed	Required	Procedure
D	2	1	**(P)**

One may be inoperative.

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23-51-01 Audio Control Panels (ACP)

23-51-01-04 MIC/CALL Lights

23-51-01-04A Captain and First Officer

Interval	Installed	Required	Procedure
C	36	0	**(P)**

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23-51-01 **Audio Control Panels (ACP)**

23-51-01-04 **MIC/CALL Lights**

23-51-01-04B **First Observer**

Interval	Installed	Required	Procedure
D	18	0	**(P)**

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23-51-01 Audio Control Panels (ACP)

23-51-01-05 Receiver Lights

23-51-01-05A Captain and First Officer

Interval	Installed	Required	Procedure
C	26	0	**(P)**

May be inoperative provided procedures do not require their use.

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23-51-01 **Audio Control Panels (ACP)**

23-51-01-05 **Receiver Lights**

23-51-01-05B **First Observer**

Interval	Installed	Required	Procedure
D	13	0	**(P)**

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23-51-02 Flight Deck Hand Microphones

23-51-02A Associated Boom Microphone Operates Normally

Interval	Installed	Required	Procedure
C	3	0	**(P)**

May be inoperative or missing provided:

a. Associated boom microphone operates normally.

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23-51-02 Flight Deck Hand Microphones

23-51-02B Procedures Do Not Require Its Use

Interval	Installed	Required	Procedure
D	3	0	**(P)**

May be inoperative or missing provided:
a. Procedures do not require their use.

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23-51-03 Flight Deck Headsets/Headphones

Interval	Installed	Required	Procedure
D	4	–	**(P)**

If required, it must be operative for each person on cockpit duty.

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23-51-03 Flight Deck Headsets/Headphones

23-51-03-01 Headset Boom Microphones

Interval	Installed	Required	Procedure
A	4	0	**(P)**

May be inoperative provided:

a. Associated hand microphone is installed and operates normally.
b. Repairs are made within three flight days.

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23-51-03 Flight Deck Headsets/Headphones

23-51-03-02 Headset Earphones/Headphones

Interval	Installed	Required	Procedure
C	4	1	**(P)**

Either captain’s or first officer’s earphones/headphones may be inoperative provided:

a. Associated flight deck speaker system operates normally.

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23-51-04 Microphone (MIC)/Interphone Switches

23-51-04-01 Control Wheel MIC/Interphone Switches

Interval	Installed	Required	Procedure
C	2	1	**(M) (P)**

One may be inoperative provided:

a. Affected switch is deactivated open.

b. Associated audio control panel MIC/interphone switch operates normally.

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MAINTENANCE (M)

Deactivate the inoperative control wheel MIC/interphone switch, confirm it is deactivated open and verify the associated pilot’s audio control panel (ACP) MIC/ interphone switch operates normally (AMM DDG 23-51-04).

1. Deactivate the inoperative control wheel MIC/interphone switch.
   - A. For captain's switch inoperative, open circuit breaker FLT INTERPHONE-CAPT and lock with a DO NOT CLOSE tag.
   - B. For first officer's switch inoperative, open circuit breaker FLT INTERPHONE-FO and lock with a DO NOT CLOSE tag.
   - C. Gain access to the inoperative MIC/interphone switch wiring harness assembly in the control wheel cavity beneath the approach chart plate.
   - D. Extract the three white wires SW3-1-24, SW3-2-24 and SW3-3-24 from the jiffy connectors.
   - E. Cap and stow the wires.
   - F. Reinstall the control wheel cover assembly and approach chart plate.
   - G. For captain's switch inoperative, close FLT INTERPHONE-CAPT circuit breaker.
   - H. For first officer's switch inoperative, close FLT INTERPHONE-FO circuit breaker.
2. Confirm the inoperative control wheel MIC/interphone switch is deactivated open and verify the associated pilot’s ACP MIC/interphone switch operates normally.
   - A. Push the FLT transmitter select switch on the captain’s and first officer’s ACPs and ensure the FLT MIC light is illuminated on both panels.
   - B. Ensure the FLT receiver light is illuminated and receiver volume control is properly adjusted on both ACPs.
   - C, Speak into the pilot’s microphone associated with the inoperative switch while simultaneously pushing the deactivated control wheel MIC/interphone switch. No transmission should be heard on the other pilot’s headset.
   - D. Speak into the pilot’s microphone associated with the inoperative switch while simultaneously pushing the associated pilot’s ACP MIC switch. The transmission should be clearly heard on the other pilot’s headse.

23-51-04 Microphone (MIC)/Interphone Switches

23-51-04-02 Flight Crew Audio Control Panel MIC/Interphone Switches

Interval	Installed	Required	Procedure
C	2	1	**(M) (P)**

One may be inoperative provided:

a. Affected switch is verified inoperative open.

b. Associated control wheel MIC/interphone switch operates normally.

MAINTENANCE (M)

Confirm the inoperative audio control panel (ACP) MIC/interphone switch is inoperative open and verify the associated pilot's control wheel MIC/interphone switch operates normally
(AMM DDG 23-51-04).

1. Provide electrical power on the airplane.
2. Push the FLT transmitter select switch on the captain's and first officer's ACPs and ensure the FLT MIC light is illuminated on both panels.
3. Ensure the FLT receiver light is illuminated and receiver volume control is properly adjusted on both ACPs.
4. Without pressing MIC on the control wheel, ACP or glareshield, speak into the associated microphone and determine if voice transmission can be heard on the other pilot's headset. If no voice transmission is heard, the ACP MIC/interphone switch is in the open position.
5. Speak into the pilot's microphone associated with the inoperative switch while simultaneously pushing the inoperative ACP MIC/interphone switch. No transmission should be heard on the other pilot's headset.
6. Speak into the pilot's microphone associated with the inoperative switch while simultaneously pushing the associated pilot's control wheel MIC/ interphone switch. The transmission should be clearly heard on the other pilot's headset.

23-51-04 Microphone (MIC)/Interphone Switches

23-51-04-03 Glareshield MIC Switches

23-51-04-03A Microphone Switch Deactivated

Interval	Installed	Required	Procedure
C	2	0	**(M) (P)**

May be inoperative provided:

a. Microphone switch is deactivated open.

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MAINTENANCE (M)

Deactivate the inoperative glareshield MIC switch and confirm it is deactivated open (AMM DDG 23-51-04).

1. Deactivate the inoperative glareshield MIC switch.
   A. Open the following circuit breakers and lock with a DO NOT CLOSE tag:
      - FLT INTERPHONE-CAPT
      - FLT INTERPHONE-FO
      - FLT DK LTS-FO INST PNL
      - FLT DK LTS-STBY INST PNL
   B. Remove the three screws which mount the inoperative switch panel (CLOCK/MAP/MIC) in the glareshield panel.
   C. Pull the inoperative switch panel out of the glareshield panel.
   D. Push out pins 8 and 9 from the electrical connector.
   E. Cap and stow the disconnected wires.
   F. Install the switch panel in the glareshield panel and secure with the three screws.
   G. Close the following circuit breakers:
      - FLT INTERPHONE-CAPT
      - FLT INTERPHONE-FO
      - FLT DK LTS-FO INST PNL
      - FLT DK LTS-STBY INST PNL
2. Confirm the inoperative glareshield MIC switch is deactivated open.
   A. Provide electrical power on the airplane.
   B. Push the FLT transmitter select switch on the captain’s and first officer’s ACPs and ensure the FLT MIC light is illuminated on both panels.
   C. Ensure the FLT receiver light is illuminated and receiver volume control is properly adjusted on both ACPs.
   D. Speak into the pilot’s microphone associated with the inoperative switch while simultaneously pushing the deactivated glareshield MIC switch. No transmission should be heard on the other pilot’s headset.

23-51-04 Microphone (MIC)/Interphone Switches
23-51-04-03 Glareshield MIC Switches
23-51-04-03B CLOCK/MAP/MIC Switch Panel Deactivated

Interval	Installed	Required	Procedure
C	2	0	**(M)**

One may be inoperative provided:

a. Associated CLOCK/MAP/MIC switch panel is deactivated.
b. Associated CLOCK function is considered inoperative.
c. Associated flight compartment illumination system (MAP light) is considered inoperative.

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MAINTENANCE (M)

Deactivate the inoperative glareshield MIC switch and confirm it is deactivated open (AMM DDG 23-51-04).

1. Deactivate the inoperative glareshield MIC switch.
    A. Open the following circuit breakers and lock with a DO NOT CLOSE tag:
        - FLT INTERPHONE-CAPT
        - FLT INTERPHONE-FO
        - FLT DK LTS-FO INST PNL
        - FLT DK LTS-STBY INST PNL
    B. Remove the three screws which mount the inoperative switch panel (CLOCK/MAP/MIC) in the glareshield panel.
    C. Pull the inoperative switch panel out of the glareshield panel.
    D. Disconnect, cap and stow electrical connector.
    E. Install the switch panel in the glareshield panel and secure with the three screws.
    F. Close the following circuit breakers:
        - FLT INTERPHONE-CAPT
        - FLT INTERPHONE-FO
        - FLT DK LTS-FO INST PNL
        - FLT DK LTS-STBY INST PNL

23-51-05 Flight Deck Speaker Systems

Interval	Installed	Required	Procedure
C	2	1	**(P)**

One may be inoperative provided:

a. Associated headset earphones or headphones are installed and operate normally.
b. Master warning lights operate normally.
c. Master caution lights operate normally.

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23-51-06 Audio Gateway Units

Interval	Installed	Required	Procedure
C	4	3	**(O) (P)**

Forward right audio gateway unit may be inoperative provided:
a. Service interphone nose gear jack is considered inoperative.

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Note: The airplane must also be dispatched using MEL Item 23-41-01-01.

MAINTENANCE NOTE

1. The audio gateway units are interchangeable.

OPERATIONS (O)

1. Audio identification will not be available for the following: ILS-R, GLS-R, VOR-R, DME-R. Use the PFD/ND to verify tuning of the associated receiver.
2. Use hand signals for communication with ground crew. These procedures may include any kind of 2-way handheld radio communication i.e. Walkie Talkie, mobile phone.

23-51-07 Flight Deck Analog Audio Communication

Interval	Installed	Required	Procedure
C	1	0	**(P)**

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23-75-01 Flight Deck Door Visual Surveillance Systems

23-75-01-01 Video Surveillance System

23-75-01-01A Procedures Require Use

Interval	Installed	Required	Procedure
A	1	0	**(O) (P)**

May be inoperative and components may be missing provided:

a. Repairs are made within three flight days.

Note: Any portion of the system which operates normally may be used.

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OPERATIONS (O)

1. Use interphone for flight deck entry permission and flight deck exit.

23-75-01 Flight Deck Door Visual Surveillance Systems

23-75-01-01 Video Surveillance System

23-75-01-01B Flight Deck Door Viewing Port Operates Normally

Interval	Installed	Required	Procedure
C	1	0	**(O) (P)**

May be inoperative and components may be missing provided:

a. Flight deck door viewing port operates normally.

Note: Any portion of the system which operates normally may be used.

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OPERATIONS (O)

1. Use flight deck door viewing port for flight deck entry permission and flight deck exit.

23-75-01 Flight Deck Door Visual Surveillance Systems

23-75-01-01 Video Surveillance System

23-75-01-01C Procedures Do Not Require Its Use

Interval	Installed	Required	Procedure
D	1	0	**(P)**

May be inoperative and components may be missing provided:

a. Procedures do not require its use.

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23-75-01 Flight Deck Door Visual Surveillance Systems

23-75-01-02 Flight Deck Door Viewing Port

23-75-01-02A Procedures Require Use

Interval	Installed	Required	Procedure
A	1	0	**(O) (P)**

May be inoperative provided:

a. Repairs are made within three flight days.

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OPERATIONS (O)

1. Use interphone for flight deck entry permission and exit.

23-75-01 **Flight Deck Door Visual Surveillance Systems**
23-75-01-02 **Flight Deck Door Viewing Port**

23-75-01-02B **Surveillance System Operates Normally**

Interval	Installed	Required	Procedure
C	1	0	**(O) (P)**

May be inoperative provided:
a. Video surveillance system is installed and operates normally.

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OPERATIONS (O)
1. Use Video Surveillance System for flight deck entry permission and exit.

23-93-01 Pilots’ Overhead Panel Control/Communication Channels

Interval	Installed	Required	Procedure
C	22	11	**(P)**

One control/communication channel (A or B) for each overhead control panel may be inoperative.

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Table of Contents

ATA 24 ELECTRICAL POWER .... ATA 24-1
Table Of Contents .... ATA 24-1
24-00-01 Electrical Synoptic Display .... ATA 24-4
24-09-01 Primary Power Distribution System (PPDS) Channels .... ATA 24-5
24-11-01 Variable Frequency Starter Generator (VFSG) DRIVE DISC Switch DRIVE Lights .... ATA 24-6
24-11-02 Variable Frequency Starter Generator (VFSG) Air/Oil Heat Exchanger Air Control Valves (RR, Except RR 1000-TEN) .... ATA 24-7
24-11-03 Variable Frequency Starter Generator (VFSG) Surface Air/Oil Heat Exchanger Thermal Bypass Valves (RR 1000-TEN) .... ATA 24-8
24-15-01 Common Motor Start Controller (CMSC) .... ATA 24-9
  24-15-01-01 Main Engine Start/Cabin Air Compressor .... ATA 24-9
  24-15-01-02 Center Hydraulic System .... ATA 24-11
24-21-01 Variable Frequency Starter Generator (VFSG) Electronic Chip Detector Systems .... ATA 24-12
24-22-01 Variable Frequency Starter Generator (VFSG) Systems .... ATA 24-13
  24-22-01-02 All RR Except Package B Without Modification 72-H666 Installed .... ATA 24-13
    24-22-01-02A VFSG Connected .... ATA 24-13
    24-22-01-02B VFSG Disconnected .... ATA 24-15
  24-22-01-04 Starter Systems .... ATA 24-17
    24-22-01-04-01 Starter Systems .... ATA 24-17
      24-22-01-04-01A OAT At or Below 45 Degrees C .... ATA 24-17
      24-22-01-04-01B VFSG Oil inlet Temperature is At or Below 80 Degrees C .... ATA 24-18
  24-22-01-05 GEN CTRL Switch OFF Lights .... ATA 24-19
  24-22-01-06 GEN CTRL Switch ON Lights .... ATA 24-20
24-22-02 APU Starter Generator (ASG) Systems .... ATA 24-21
  24-22-02-01 Both Inoperative .... ATA 24-21
  24-22-02-02 Left ASG Generator .... ATA 24-22
  24-22-02-03 Left ASG Starter .... ATA 24-23
  24-22-02-04 Right ASG Generator .... ATA 24-24
  24-22-02-05 Right ASG Starter .... ATA 24-25
  24-22-02-06 APU GEN Switch OFF Lights .... ATA 24-26

24-22-02-07 APU GEN Switch ON Lights . . . . ATA 24-27
24-22-03 APU Generator Control Unit (AGCU) . . . . ATA 24-28
24-22-03-01 Left AGCU . . . . ATA 24-28
24-25-01 Galley Autotransformer Unit (GATU) . . . . ATA 24-29
24-28-03 IFE/PASS SEATS Switch Lights . . . . ATA 24-30
24-28-03-01 OFF Light . . . . ATA 24-30
24-28-03-02 ON Light . . . . ATA 24-31
24-28-04 CABIN/UTILITY Switch Lights . . . . ATA 24-32
24-28-04-01 OFF Light . . . . ATA 24-32
24-28-04-02 ON Light . . . . ATA 24-33
24-31-01 APU Battery . . . . ATA 24-34
24-31-02 APU Start Power Unit (SPU) . . . . ATA 24-36
24-31-02A APU Available . . . . ATA 24-36
24-31-02B APU Not Available . . . . ATA 24-37
24-31-03 APU Battery Charger . . . . ATA 24-38
24-31-03A APU Available . . . . ATA 24-38
24-31-03B APU Not Available . . . . ATA 24-39
24-31-04 Main BATTERY Switch Lights . . . . ATA 24-40
24-31-04-01 OFF Light . . . . ATA 24-40
24-31-04-02 ON Light . . . . ATA 24-41
24-38-01 Main And APU Battery Enclosure Systems . . . . ATA 24-42
24-38-01-01 Pressure Burst Discs . . . . ATA 24-42
24-38-01-02 Burst Disc Indicators . . . . ATA 24-43
24-41-01 External Power Systems . . . . ATA 24-44
24-41-01-01 EXT PWR Switch AVAIL Lights (Flight Deck) . . . . ATA 24-45
24-41-01-02 EXT PWR Switch ON Lights (Flight Deck) . . . . ATA 24-46
24-41-01-03 CONNECTED Lights (External Power Panels) . . . . ATA 24-47
24-41-01-04 NOT IN USE Lights (External Power Panels) . . . . ATA 24-48

24-71-01 **Remote Power Distribution Unit (RPDU) Channels** . . . . **ATA 24-49**
  24-71-01-01 **Standard RPDU Channels** . . . . **ATA 24-49**
    24-71-01-01A **Gateway RPDU Channels Operate Normally** . . . . **ATA 24-49**
    24-71-01-01B **Associated Gateway RPDU Channels Inoperative** . . . . **ATA 24-50**
  24-71-01-02 **Gateway RPDU Channels** . . . . **ATA 24-51**

24-00-01 Electrical Synoptic Display

Interval	Installed	Required	Procedure
C	1	0	**(P)**

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OPERATIONS NOTE

1. For missing data on the Synoptic Display, selecting an alternate location for the display (Captain’s Inboard, First Officer’s Inboard, or Lower) may restore the missing data. Synoptic Displays containing missing data may continue to be used to the extent remaining data is useful. Airplane system faults will be annunciated by alerting and status messages.

24-09-01 Primary Power Distribution System (PPDS) Channels

Interval	Installed	Required	Procedure
C	8	4	**(P)**

One channel in each primary power distribution panel may be inoperative.

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24-11-01 Variable Frequency Starter Generator (VFSG) DRIVE DISC Switch DRIVE Lights

Interval	Installed	Required	Procedure
C	4	0	**(P)**

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UNCONTROLLED IF DOWNLOADED OR PRINTED

24-11-02 Variable Frequency Starter Generator (VFSG) Air/Oil Heat Exchanger Air Control Valves (RR, Except RR 1000-TEN)

Interval	Installed	Required	Procedure
C	4	0	**(M) (O) (P) (MV)**

May be inoperative provided:

a. Inoperative valve is locked open.

b. Appropriate performance adjustments are applied.

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MAINTENANCE (M)

Deactivate the VFSG air control valve in the open position (AMM DDG 24-11-02).

1. Gain access to the associated air control valve.
2. Visually confirm that the air control valve vane is in the fully open position.
3. Insert a flat bladed screwdriver into the lock-open engagement pin located on the air control valve assembly. The lock-open engagement pin is marked UNLOCKED and LOCKED.
4. Push on the engagement pin with the screwdriver and turn the pin a quarter turn in the counterclockwise direction for the right hand valve configuration or the clockwise direction for the left hand valve configuration until the slot lines up with the LOCKED mark.
5. Verify that the manual lock-open feature is engaged by trying to turn the manual turning device located on the upper side of the control valve assembly in the clockwise direction for the right hand configuration or the counter-clockwise direction for the left-hand configuration.

OPERATIONS (O)

1. Reduce performance limited weights as follows for each VFSG air control valve locked open.

Takeoff	Approach & Landing Climb	Enroute Climb	
1,860 kg	1,270 kg	1,270 kg	TQA to TQF
2,404 kg	907 kg	1,315 kg	TWA to TWB

Note: The enroute climb weight penalties are based on single engine operating speeds that approximate maximum lift-to-drag ratio speed. To account for the difference in level-off altitude when operating at other speeds, multiply the enroute climb weight penalty listed above by the appropriate factor listed on page 3.00-01-00.2 in the ENROUTE DIVERSION SPEED EFFECTS paragraph

2. Increase flight planning fuel by either using a fuel flow correction factor of 0.3% or increase the flight planning fuel by 0.4% for each VFSG air control valve locked open.
3. For ETOPS flight planning, increase critical fuel reserves by 0.6% for one valve locked open and 1.3% for more than one valve locked open.

24-11-03 Variable Frequency Starter Generator (VFSG) Surface Air/Oil Heat Exchanger Thermal Bypass Valves (RR 1000-TEN)

Interval	Installed	Required	Procedure
C	4	0	**(P) (MV)**

May be inoperative provided takeoffs are limited to OAT 39 degrees C or below.

Note: OAT restriction does not apply when the associated VFSG is disconnected or inoperative.

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24-15-01 Common Motor Start Controller (CMSC)

24-15-01-01 Main Engine Start/Cabin Air Compressor

Interval	Installed	Required	Procedure
C	4	3	**(M) (O) (P) (MV)**

One may be inoperative provided:

a. Inoperative CMSC is deactivated.
b. Associated VFSG starter system is considered inoperative.
c. Associated cabin air compressor is considered inoperative.
d. For CMSC L1 inoperative, left ASG starter is considered inoperative.

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Note:
1. For CMSC L1 inoperative, the airplane must also be dispatched using MEL Item 21-51-01, 24-22-01-04 and 24-22-02-03.
2. For CMSC L2 inoperative, the airplane must also be dispatched using MEL Item 21-51-01 and 24-22-01-04.
3. For CMSC R1 inoperative, the airplane must also be dispatched using MEL Item 21-51-01 and 24-22-01-04.
4. For CMSC R2 inoperative, the airplane must also be dispatched using MEL Item 21-51-01 and 24-22-01-04.

MAINTENANCE (M)

Note:
1. CMSCs are interchangeable.
2. An inoperative CMSC may be removed provided dispatch tool K24002 is installed.

Deactivate the inoperative CMSC (AMM DDG 24-15-01).

1. Using a flight deck multi-function display only, open the associated circuit breakers and lock with an INOP tag:
   A. For CMSC L1 inoperative:
      - CMSC-L1 CHAN 1
   B. For CMSC L2 inoperative:
      - CMSC-L2 CHAN 1
   C. For CMSC R1 inoperative:
      - CMSC-R1 CHAN 1
   D. For CMSC R2 inoperative:
      - CMSC-R2 CHAN 1

   Note: An inoperative CMSC may be removed provided dispatch tool K24002 is installed.

OPERATIONS (O)

Note: Single engine start is recommended.

1. For CMSC L2 or CMSC R2 inoperative:
   A. Do not operate the associated air conditioning pack on the ground when OAT is greater than 40 degrees C.
2. To minimize PECS heating, operators should consider the following options:
   A. Set packs OFF and use pre-conditioned air prior to engine start.
   B. Delay closing forward or aft cargo doors until airplane is ready for push back or engine start.
   C. Minimize APU ground operations.
   D. Start APU prior to closing cargo doors.
   E. Minimize time between cargo door closing and first engine start.
   F. Each engine should be started individually at the gate.
3. For CMSC L1 or L2 inoperative, On MISC SYSTEM CTRLS (MSC) maintenance page, confirm right ram fan is operating.
4. For CMSC R1 or R2 inoperative, On MISC SYSTEM CTRLS (MSC) maintenance page, confirm left ram fan is operating.
5. On POWER ELEC COOLING maintenance page 1, confirm SUPPLY TEMP of left and right PECS loop is 142 degrees F (61 degrees C) or lower.
6. Start APU.
7. Start first engine.

   Note: Engine start time will be longer than normal.
8. Start second engine.
9. Shutdown APU.

24-15-01 Common Motor Start Controller (CMSC)

24-15-01-02 Center Hydraulic System

Interval	Installed	Required	Procedure
C	2	1	**(P) (MV)**

One may be inoperative provided:

a. Associated center hydraulic system electric motor-driven pump is considered inoperative.

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Note: An inoperative CMSC for a center system hydraulic pump will cause the associated center system hydraulic pump to be inoperative. The airplane must also be dispatched using MEL Item 29-11-02.

MAINTENANCE NOTE

1. An inoperative CMSC may be removed provided dispatch tool K24002 is installed.

UNCONTROLLED IF DOWNLOADED OR PRINTED

24-21-01 Variable Frequency Starter Generator (VFSG) Electronic Chip Detector Systems

Interval	Installed	Required	Procedure
C	4	0	**(P)**

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24-22-01 Variable Frequency Starter Generator (VFSG) Systems

24-22-01-02 All RR Except Package B Without Modification 72-H666 Installed

24-22-01-02A VFSG Connected

Interval	Installed	Required	Procedure
A	4	3	**(M) (O) (P) (MV)**

May be inoperative provided:

a. Inoperative VFSG is connected.
b. Verify ELEC GEN DRIVE is not displayed when associated engine is running.
c. Verify the associated GEN CTRL indication box shows an amber “X” on the electrical synoptic page.
d. Verify the associated Electrical Panel (P5) drive light is illuminated while engine is off.
e. Both Left and Right ASG generators operate normally.
f. Left APU generator control unit operates normally.
g. APU battery operates normally.
h. APU battery charger operates normally.
i. Associated engine is not started on the ground at OAT above 45 degrees C unless remaining VFSG oil temperature is at or below 80 degrees C.
j. APU is started before departure and operated continuously throughout the flight.
k. Flight remains within 180 minutes of landing at a suitable airport.
l. Repairs are made within three flight days.

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Note:

1. For ELEC GEN SYS L1 or R1 status message, right ram air fan motor controller and associated right ram air fan must operate normally (RAM FAN CONTROL R and RAM FAN R are not displayed) for main engine start.
2. For ELEC GEN SYS L2 or R2 status message, left ram air fan motor controller and associated left ram air fan must operate normally (RAM FAN CONTROL L and RAM FAN L are not displayed) for main engine start.
3. For one or two CAC also inoperative (MMEL item 21-51-01), one or two specific VFSGs must be operative.

MAINTENANCE (M)

Leave the inoperative VFSG connected and ensure the associated engine is not started at OAT above 45 degrees C unless the operative VFSG oil temperature is at or below 80 degrees C (AMM DDG 24-22-01).

1. Set or verify the associated Electrical Panel (P5) GEN CTRL switch is ON.
2. Verify the associated Electrical Panel (P5) drive light is illuminated while engine is off.

3. Start the associated engine.

   Note: 1. When OAT is greater than 45 degrees C, VFSG oil temperature will cool at a rate of approximately 0.5 to 1.0 degrees C per minute.
   2. Steps 3 through 5 may be accomplished based on Aircraft Maintenance Record/Logbook of prior flight segment or engine run.
4. On the Electrical Synoptic page, confirm the associated green GEN DRIVE indication box shows an amber “X”.
5. Verify the associated ELEC GEN DRIVE advisory message is not displayed.

OPERATIONS (O)

Note: 1. Expect engine start time to be longer.
2. Single engine start is recommended.

1. The flight must remain within 180 minutes of landing at a suitable airport.
2. Increase flight planning fuel by either using an airplane drag correction factor of 1.0% or increase the flight planning fuel by 1.2% with APU running to account for the open APU air inlet door fully open.
3. Increase flight planning fuel by 250 lb (114 kg) per hour of APU usage inflight and 480 lb (218 kg) per hour of APU usage on the ground.
4. Start the APU before departure and operate the APU continuously.
5. For VFSG L1 or R1 inoperative, On MISC SYSTEM CTRLS (MSC) maintenance page, confirm right ram fan is operating.
6. For VFSG L2 or R2 inoperative, On MISC SYSTEM CTRLS (MSC) maintenance page, confirm left ram fan is operating.

24-22-01 **Variable Frequency Starter Generator (VFSG) Systems**

24-22-01-02 **All RR Except Package B Without Modification 72-H666 Installed**

24-22-01-02B **VFSG Disconnected**

Interval	Installed	Required	Procedure
A	4	3	**(M) (O) (P) (MV)**

May be inoperative provided:
a. Inoperative VFSG is disconnected.
b. Both Left and Right ASG generators operate normally.
c. Left APU generator control unit operates normally.
d. APU battery operates normally.
e. APU battery charger operates normally.
f. Associated engine is not started on the ground at OAT above 45 degrees C unless remaining VFSG oil temperature is at or below 80 degrees C.
g. APU is started before departure and operated continuously throughout the flight.
h. Flight remains within 180 minutes of landing at a suitable airport.
i. Repairs are made within three flight days.

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Note:
1. For VFSG L1, L2, or R2 disconnected, the PFCS INTERFACE status message will be displayed. The airplane must also be dispatched using MMEL item 27-02-03
2. For ELEC GEN SYS L1 or R1 status message, right ram air fan motor controller and associated right ram air fan must operate normally (RAM FAN CONTROL R and RAM FAN R are not displayed) for main engine start.
3. For ELEC GEN SYS L2 or R2 status message, left ram air fan motor controller and associated left ram air fan must operate normally (RAM FAN CONTROL L and RAM FAN L are not displayed) for main engine start.
4. For one or two CAC also inoperative (MMEL item 21-51-01), one or two specific VFSGs must be operative.

MAINTENANCE (M)

Leave the inoperative VFSG connected and ensure the associated engine is not started at OAT above 45 degrees C unless the operative VFSG oil temperature is at or below 80 degrees C (AMM DDG 24-22-01).

1. Start the associated engine.

   Note:
   1. When OAT is greater than 45 degrees C, VFSG oil temperature will cool at a rate of approximately 0.5 to 1.0 degrees C per minute.
   2. Steps 1 through 3 may be accomplished based on Aircraft Maintenance Record/Logbook of prior flight segment or engine run.

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2. Disconnect the VFSG using the associated generator DRIVE disconnect switch.

   Note: Operating the airplane with a disconnected VFSG will cause internal heat damage to the VFSG input shaft and disconnect mechanism
3. On the Electrical Synoptic page, confirm the associated green GEN DRIVE indication box shows an amber “X”.

OPERATIONS (O)

Note:
1. Expect engine start time to be longer.
2. Single engine start is recommended.

1. The flight must remain within 180 minutes of landing at a suitable airport.
2. Increase flight planning fuel by either using an airplane drag correction factor of 1.0% or increase the flight planning fuel by 1.2% with APU running to account for the open APU air inlet door fully open.
3. Increase flight planning fuel by 250 lb (114 kg) per hour of APU usage inflight and 480 lb (218 kg) per hour of APU usage on the ground.
4. Start the APU before departure and operate the APU continuously.
5. For VFSG L1 or R1 inoperative, On MISC SYSTEM CTRLS (MSC) maintenance page, confirm right ram fan is operating.
6. For VFSG L2 or R2 inoperative, On MISC SYSTEM CTRLS (MSC) maintenance page, confirm left ram fan is operating.

24-22-01 Variable Frequency Starter Generator (VFSG) Systems

24-22-01-04 Starter Systems

24-22-01-04-01 Starter Systems

24-22-01-04-01A OAT At or Below 45 Degrees C

Interval	Installed	Required	Procedure
C	4	2	**(P)**

One starter system on each engine may be inoperative provided:

a. Associated engine is not started on the ground at OAT above 45 degrees C.

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OPERATIONS NOTE

1. The following components must operate normally for main engine start.
   A. With an ELEC ENGINE STARTER L1 or R1 status message:
      - L2 VFSG
      - R2 VFSG
      - Right ram air fan motor controller
      - Right ram air fan
   B. With an ELEC ENGINE STARTER L2 or R2 status message:
      - L1 VFSG
      - R1 VFSG
      - Left ram air fan motor controller
      - Left ram air fan

24-22-01 Variable Frequency Starter Generator (VFSG) Systems
24-22-01-04 Starter Systems
24-22-01-04-01 Starter Systems

24-22-01-04-01B **VFSG Oil inlet Temperature is At or Below 80 Degrees C**

Interval	Installed	Required	Procedure
C	4	2	**(M) (P)**

One starter system on each engine may be inoperative provided:

a. Associated engine is not started on ground at OAT above 45 degree C, unless remaining starter VFSG oil temperature is at or below 80 degree C.

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MAINTENANCE (M)

Ensure the associated engine is not started at OAT above 45 degrees C unless the operative starter VFSG oil temperature is at or below 80 degrees C (AMM DDG 24-22-01).

1. Prior to starting associated engine at OAT above 45 degrees C, confirm the operative starter VFSG inlet oil temperature (IN TEMP) on the Electrical maintenance page 1 is at or below 80 degrees C.

Note: When OAT is greater than 45 degrees C, VFSG oil temperature will cool at a rate of approximately 0.5 to 1.0 degrees C per minute.

OPERATIONS NOTE

1. The following components must operate normally for main engine start.
   A. With an ELEC ENGINE STARTER L1 or R1 status message:
      - L2 VFSG
      - R2 VFSG
      - Right ram air fan motor controller
      - Right ram air fan
   B. With an ELEC ENGINE STARTER L2 or R2 status message:
      - L1 VFSG
      - R1 VFSG
      - Left ram air fan motor controller
      - Left ram air fan

24-22-01 Variable Frequency Starter Generator (VFSG) Systems

24-22-01-05 GEN CTRL Switch OFF Lights

Interval	Installed	Required	Procedure
C	4	0	**(P)**

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24-22-01 Variable Frequency Starter Generator (VFSG) Systems

24-22-01-06 GEN CTRL Switch ON Lights

Interval	Installed	Required	Procedure
C	4	0	**(P)**

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24-22-02 APU Starter Generator (ASG) Systems

24-22-02-01 Both Inoperative

Interval	Installed	Required	Procedure
C	2	0	**(M) (O) (P) (MV)**

Both may be inoperative provided:
a. APU is not used.
b. Left AGCU operates normally.
c. VFSG systems operate normally.
d. Flight remains within 180 minutes of landing at a suitable airport

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MAINTENANCE (M)

Note: 1. A VFSG system is considered to be operating normally if its associated status message (ELEC GEN SYS L1, L2, R1 or R2) is not displayed.
2. An inoperative ASG may be removed provided dispatch tool K24012 is installed. If the APU is operated for more than 120 hours with an ASG removed, the APU gearbox should be inspected for wear.

Deactivate left and right APU Starter Generator (ASG) generators by positioning associated Electrical Panel (P5) APU GEN L and APU GEN R switches OFF.

OPERATIONS (O)

Note: Simultaneous engine start is not allowed.

1. Flight must remain within 180 minutes of landing at a suitable airport.
2. Start the first engine using the Ground Power Engine Start Supplementary Procedure.

24-22-02 APU Starter Generator (ASG) Systems

24-22-02-02 Left ASG Generator

Interval	Installed	Required	Procedure
C	1	0	**(M) (O) (P) (MV)**

May be inoperative provided:
a. Left ASG starter is deactivated.
b. APU battery operates normally.
c. APU SPUoperates normally.
d. Right ASG generator operates normally.
e. Right ASG starter operates normally.
f. VFSG systems operate normally.
g. Flight remains within 180 minutes of landing at a suitable airport.

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MAINTENANCE (M)

Note: 1. A VFSG system is considered to be operating normally if its associated status message (ELEC GEN SYS L1, L2, R1 or R2) is not displayed.
2. An inoperative ASG may be removed provided dispatch tool K24012 is installed. If the APU is operated for more than 120 hours with an ASG removed, the APU gearbox should be inspected for wear.

Deactivate the left ASG starter (AMM DDG 24-22-02).

1. Position associated Electrical Panel (P5) APU GEN L switch OFF.
2. Using a flight deck multi-function display only, open circuit breaker APU START EXCITATION L and lock with an INOP tag.

OPERATIONS (O)

Note: 1. Simultaneous engine start is not allowed.
2. ELEC APU STARTER L status message may be displayed based on day rotation for APU starting with external power.

1. Flight must remain within 180 minutes of landing at a suitable airport.

24-22-02 APU Starter Generator (ASG) Systems

24-22-02-03 Left ASG Starter

Interval	Installed	Required	Procedure
C	1	0	**(P)**

May be inoperative provided:

a. APU battery operates normally.

b. APU SPU operates normally.

c. Right ASG generator operates normally.

d. Right ASG starter operates normally.

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24-22-02 APU Starter Generator (ASG) Systems

24-22-02-04 Right ASG Generator

Interval	Installed	Required	Procedure
C	1	0	**(M) (O) (P) (MV)**

May be inoperative provided:

a. Right ASG starter is deactivated.
b. Left AGCU operates normally.
c. Left ASG generator operates normally.
d. Left ASG starter operates normally.
e. VFSG systems operate normally.
f. Flight remains within 180 minutes of landing at a suitable airport.

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MAINTENANCE (M)

Note: 1. A VFSG system is considered to be operating normally if its associated status message (ELEC GEN SYS L1, L2, R1 or R2) is not displayed.
2. An inoperative ASG may be removed provided dispatch tool K24012 is installed. If the APU is operated for more than 120 hours with an ASG removed, the APU gearbox should be inspected for wear.

Deactivate the right ASG starter (AMM DDG 24-22-02).

1. Position associated Electrical Panel (P5) APU GEN R switch OFF.
2. Open P049 circuit breaker SPU HOLD ON CONTROL and lock with an INOP tag.

OPERATIONS (O)

Note: 1. APU cannot be started using the APU battery.
2. ELEC APU START POWER UNIT status message will display during the APU start and remain displayed.
3. Simultaneous engine start is not allowed.
4. ELEC APU STARTER R status message may be displayed based on day rotation for APU starting with external power.

1. Flight must remain within 180 minutes of landing at a suitable airport.

24-22-02 APU Starter Generator (ASG) Systems

24-22-02-05 Right ASG Starter

Interval	Installed	Required	Procedure
C	1	0	**(P)**

May be inoperative provided:

a. Left AGCU operates normally.
b. Left ASG generator operates normally.
c. Left ASG starter operates normally.

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OPERATIONS NOTE

1. APU cannot be started using the APU battery.
2. ELEC APU START POWER UNIT status message will display during the APU start.

24-22-02 APU Starter Generator (ASG) Systems

24-22-02-06 APU GEN Switch OFF Lights

Interval	Installed	Required	Procedure
C	2	0	**(P)**

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24-22-02 APU Starter Generator (ASG) Systems

24-22-02-07 APU GEN Switch ON Lights

Interval	Installed	Required	Procedure
C	2	0	**(P)**

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24-22-03 APU Generator Control Unit (AGCU)

24-22-03-01 Left AGCU

Interval	Installed	Required	Procedure
C	1	0	**(M) (O) (P) (MV)**

May be inoperative provided:
- a. Left AGCU is deactivated.
- b. APU operates normally.
- c. APU battery operates normally.
- d. APU SPU operates normally.
- e. Right ASG generator operates normally.
- f. Right ASG starter operates normally.
- g. VFSG systems operate normally.
- h. Flight remains within 180 minutes of landing at a suitable airport.

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Note: The airplane must also be dispatched using MEL Item 24-22-02-02.

MAINTENANCE (M)

A VFSG system is considered to be operating normally if its associated status message (ELEC GEN SYS L1, L2, R1 or R2) is not displayed.

Deactivate the left AGCU (AMM DDG 24-22-03).

1. Open and collar P300 panel circuit breaker APU GCU-L CAPT.
2. Using a flight deck multi-function display only, open the APU GCU-L R28 circuit breaker and lock with an INOP tag.
3. Gain access to the P150 panel.
4. Disconnect, cap and stow the L ASG PMG connector (DP150P01A).

OPERATIONS (O)

Note: 1. Engines cannot be started using external power.
2. Simultaneous engine start is not allowed.

1. Flight must remain within 180 minutes of landing at a suitable airport.

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24-25-01 Galley Autotransformer Unit (GATU)

Interval	Installed	Required	Procedure
C	1	0	**(M) (P)**

May be inoperative deactivated.

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MAINTENANCE(M)

Deactivate the inoperative galley autotransformer unit (GATU) (AMM DDG 24-25-01).

1. Using a flight deck multi-function display only, open circuit breaker ATU GALLEY and lock with an INOP tag.

   Note: 115 Vac power will not be available at the galley located at door 3L/3R and 4L/4R.

24-28-03 IFE/PASS SEATS Switch Lights

24-28-03-01 OFF Light

Interval	Installed	Required	Procedure
C	1	0	**(P)**

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24-28-03 IFE/PASS SEATS Switch Lights

24-28-03-02 ON Light

Interval	Installed	Required	Procedure
C	1	0	**(P)**

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24-28-04 CABIN/UTILITY Switch Lights

24-28-04-01 OFF Light

Interval	Installed	Required	Procedure
C	1	0	**(P)**

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24-28-04 CABIN/UTILITY Switch Lights

24-28-04-02 ON Light

Interval	Installed	Required	Procedure
C	1	0	**(P)**

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24-31-01 APU Battery

Interval	Installed	Required	Procedure
C	1	0	**(M) (O) (P) (MV)**

May be inoperative provided:

a. APU is not used.
b. Left AGCU operates normally.
c. VFSG systems operate normally.
d. Flight remains within 180 minutes of landing at a suitable airport

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MAINTENANCE (M)

Note: 1. A VFSG system is considered to be operating normally ifits associated status message (ELEC GEN SYS L1, L2, R1 or R2) is not displayed.
2. Following an APU battery singled cell event, refer to AMM DDG 24-31-01 for procedures required for continued operation.

Deactivate the APU battery (AMM DDG 24-31-01).

1. Open and collar the P49 panel circuit breaker APU BAT CHGR OUTPUT.

   Note: ELEC GEN CTRL UNIT L1, L2, R1, R2 status message may display when external power is applied. These messages must be cleared prior to dispatch. For electrical generator control status messages displayed, cycle power to each generator control unit one at a time.

   A. For ELEC GEN CTRL UNIT L1 status message:
      1) Open P49 panel, circuit breaker GCU-LX BAT
      2) Open P300 panel, circuit breaker GCU-L1 CAPT
      3) Open P400 panel, circuit breaker GCU-L1 R28
      4) Wait 20 seconds.
      5) Close all three circuit breakers.

   B. For ELEC GEN CTRL UNIT L2 status message:
      1) Open P49 panel, circuit breaker GCU-LX BAT
      2) Open P300 panel, circuit breaker GCU-L2 CAPT
      3) Using a flight deck multi-function display only, open circuit breaker GCU-L2 R28.
      4) Wait 20 seconds.
      5) Close all three circuit breakers.

   C. For ELEC GEN CTRL UNIT R1 status message:
      1) Open P49 panel, circuit breaker GCU-RX BAT
      2) Open P400 panel, circuit breaker GCU-R1 FO
      3) Open P300 panel, circuit breaker GCU-R1 L28
      4) Wait 20 seconds.
      5) Close all three circuit breakers.

D. For ELEC GEN CTRL UNIT R2 status message:
    1) Open P49 panel, circuit breaker GCU-RX BAT
    2) Open P400 panel, circuit breaker GCU-R2 FO
    3) Using a flight deck multi-function display only, open circuit breaker GCU-R2 L28.
    4) Wait 20 seconds.
    5) Close all three circuit breakers.

OPERATIONS (O)

Note: 1. The ELEC APU STARTER R status message may be displayed.
2. Simultaneous engine start is not allowed.

1. Flight must remain within 180 minutes of landing at a suitable airport.
2. Start the first engine using the Ground Power Engine Start Supplementary Procedure.
3. The following weight & balance information is provided for dispatch following a single cell battery event that results in the APU battery being moved or removed.
    A. Weight: 64 lb (29kg).
    B. For 787-8: **TQA to TQF**
        1) Balance arm: 1279 in.
    C. For 787-9: **TWA to TWB**
        1) Balance arm: 1397 in.

24-31-02 APU Start Power Unit (SPU)

24-31-02A APU Available

Interval	Installed	Required	Procedure
C	1	0	**(P)**

May be inoperative provided:

a. APU operates normally.
b. APU battery operates normally.
c. Left AGCU operates normally.
d. Left ASG generator operates normally.
e. Left ASG starter operates normally.
f. Right ASG generator operates normally.

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OPERATIONS NOTE

1. The APU cannot be started using the APU battery.

24-31-02 APU Start Power Unit (SPU)

24-31-02B APU Not Available

Interval	Installed	Required	Procedure
C	1	0	**(O) (P) (MV)**

May be inoperative provided:

a. APU is not used.
b. Left AGCU operates normally.
c. VFSG systems operate normally.
d. Flight remains within 180 minutes of landing at a suitable airport.

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MAINTENANCE NOTE

1. A VFSG system is considered to be operating normally if its associated status message (ELEC GEN SYS L1, L2, R1 or R2) is not displayed.

OPERATIONS (O)

Note: Simultaneous engine start is not allowed.

1. Flight must remain within 180 minutes of landing at a suitable airport.
2. Start the first engine using the Ground Power Engine Start Supplementary Procedure.

24-31-03 APU Battery Charger

24-31-03A APU Available

Interval	Installed	Required	Procedure
C	1	0	**(M) (P)**

May be inoperative provided:

a. APU battery charger is deactivated.
b. APU battery voltage is verified to be sufficient for APU start before each departure.
c. APU operates normally.
d. One ASG starter operates normally.
e. Left ASG generator operates normally.
f. Right ASG generator operates normally.

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MAINTENANCE (M)

Note: ELEC APU STARTER R status message may be displayed.

Verify APU battery voltage is sufficient for an APU start and deactivate the APU battery charger (AMM DDG 24-31-03).

1. Open and collar the P400 panel circuit breaker APU BAT CHGR INPUT.
2. Before each departure:
   A. Confirm P49 panel circuit breaker APU BAT CHGR OUTPUT is closed.
   B. Verify APU battery voltage is 31 DC-V or greater on the ELECTRICAL maintenance page 1.
   C. Open and collar P49 panel circuit breaker APU BAT CHGR OUTPUT.

24-31-03 APU Battery Charger

24-31-03B APU Not Available

Interval	Installed	Required	Procedure
C	1	0	**(M) (O) (P) (MV)**

May be inoperative provided:

a. APU battery charger is deactivated.
b. APU is not used.
c. Left AGCU operates normally.
d. VFSG systems operate normally.
e. Flight remains within 180 minutes of landing at a suitable airport.

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MAINTENANCE (M)

Note: A VFSG system is considered to be operating normally if its associated status message (ELEC GEN SYS L1, L2, R1 or R2) is not displayed.

Deactivate the APU battery charger (AMM DDG 24-31-03).

1. Open and collar the P400 panel circuit breaker APU BAT CHGR INPUT.
2. Open and collar the P49 panel circuit breaker APU BAT CHGR OUTPUT.

OPERATIONS (O)

1. Flight must remain within 180 minutes of landing at a suitable airport.
2. Start the first engine using the Ground Power Engine Start Supplementary Procedure.

24-31-04 Main BATTERY Switch Lights

24-31-04-01 OFF Light

Interval	Installed	Required	Procedure
C	1	0	**(P)**

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24-31-04 **Main BATTERY Switch Lights**

24-31-04-02 **ON Light**

Interval	Installed	Required	Procedure
C	1	0	**(P)**

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24-38-01 Main and APU Battery Enclosure Systems

24-38-01-01 Pressure Burst Discs

Interval	Installed	Required	Procedure
C	2	0	**(P)**

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MAINTENANCE NOTE

Following a main battery single cell event, refer to AMM DDG 24-38-01 for procedures required for continued operation.

Following an APU battery single cell event, also dispatch per MEL Item 24-31-01

24-38-01 Main and APU Battery Enclosure Systems

24-38-01-02 Burst Disc Indicators

Interval	Installed	Required	Procedure
C	2	0	**(P)**

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MAINTENANCE NOTE

Following a main battery single cell event, refer to AMM DDG 24-38-01 for procedures required for continued operation.
Following an APU battery single cell event, also dispatch per MEL Item 24-31-01.

24-41-01 External Power Systems

Interval	Installed	Required	Procedure
C	3	0	**(P)**

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24-41-01 **External Power Systems**

24-41-01-01 **EXT PWR Switch AVAIL Lights (Flight Deck)**

Interval	Installed	Required	Procedure
C	3	0	**(O) (P)**

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OPERATIONS (O)

1. Use communication between ground and flight deck to verify the status of the power system connection.

24-41-01 **External Power Systems**

24-41-01-02 **EXT PWR Switch ON Lights (Flight Deck)**

Interval	Installed	Required	Procedure
C	3	0	**(O) (P)**

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OPERATIONS (O)

1. Use communication between ground and flight deck to verify the status of the power system connection.

24-41-01 **External Power Systems**

24-41-01-03 **CONNECTED Lights (External Power Panels)**

Interval	Installed	Required	Procedure
C	3	0	**(O) (P)**

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OPERATIONS (O)

1. Use communication between ground and flight deck to verify the status of the power system connection.

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24-41-01 External Power Systems

24-41-01-04 NOT IN USE Lights (External Power Panels)

Interval	Installed	Required	Procedure
C	3	0	**(O) (P)**

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OPERATIONS (O)

1. Use communication between ground and flight deck to verify the status of the power system connection.

24-71-01 Remote Power Distribution Unit (RPDU) Channels

24-71-01-01 Standard RPDU Channels

24-71-01-01A Gateway RPDU Channels Operate Normally

Interval	Installed	Required	Procedure
C	26	13	**(P)**

One channel in each standard RPDU may be inoperative provided:

a. Gateway RPDU channels operate normally.

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24-71-01 Remote Power Distribution Unit (RPDU) Channels
24-71-01-01 Standard RPDU Channels
24-71-01-01B Associated Gateway RPDU Channels Inoperative

Interval	Installed	Required	Procedure
B	26	22	**(P)**

One channel in each standard RPDU associated with an inoperative gateway RPDU channel may be inoperative.

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MAINTENANCE NOTE

1. The following Standard RPDUs are associated with each Gateway RPDU:

Gateway RPDU	Associated Standard RPDUs
71	21, 73 75
72	22, 74, 76
81	31, 33, 41
82	32, 34, 42, 92

24-71-01 Remote Power Distribution Unit (RPDU) Channels

24-71-01-02 Gateway RPDU Channels

Interval	Installed	Required	Procedure
B	8	7	**(P)**

One may be inoperative provided:

a. Any inoperative standard RPDU channels are associated with the inoperative gateway RPDU channel.

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MAINTENANCE NOTE

1. The following Standard RPDUs are associated with each Gateway RPDU:

Gateway RPDU	Associated Standard RPDUs
71	21, 73 75
72	22, 74, 76
81	31, 33, 41
82	32, 34, 42, 92

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Table of Contents

ATA 25 EQUIPMENT/FURNISHINGS . . . . . ATA 25-1
Table Of Contents . . . . . ATA 25-1
25-11-01 Flight Crew Seats . . . . . ATA 25-6
25-11-01-01 Power Adjustment Systems . . . . . ATA 25-6
25-11-01-02 Manual Adjustment System . . . . . ATA 25-7
25-11-01-02-01 Recline Systems . . . . . ATA 25-7
25-11-01-02-02 Vertical Adjustments . . . . . ATA 25-8
25-11-01-02-03 Armrests . . . . . ATA 25-9
25-11-01-02-04 Lumbar/Thigh Supports . . . . . ATA 25-10
25-11-01-02-05 Headrests . . . . . ATA 25-11
25-11-01-02-06 Seat Pan Tilt . . . . . ATA 25-12
25-11-02 Observer Seats . . . . . ATA 25-13
25-11-02-01 First Observer Seat (Including Associated Equipment) . . . . . ATA 25-13
25-11-02-01A Passenger Seat Available . . . . . ATA 25-13
25-11-02-01B Second Observer’s Seat Available . . . . . ATA 25-14
25-11-02-01C Seat Is Acceptable To Inspector . . . . . ATA 25-15
25-11-02-02 Second Observer Seat (Including Associated Equipment) . . . . . ATA 25-16
25-18-01 Flotation Equipment . . . . . ATA 25-17
25-18-01-01 Life Vest, Yellow, Demonstration . . . . . ATA 25-17
25-18-01-01-01 787-8 . . . . . ATA 25-17
25-18-01-01-02 787-9 . . . . . ATA 25-18
25-18-01-02 Life Vest, Yellow, Infant . . . . . ATA 25-19
25-18-01-02-01 787-8 . . . . . ATA 25-19
25-18-01-02-02 787-9 . . . . . ATA 25-20
25-18-01-03 Life Vest, Red - Flight Deck . . . . . ATA 25-21
25-18-01-03-01 787-8 . . . . . ATA 25-21
25-18-01-03-02 787-9 . . . . . ATA 25-22
25-18-01-04 Life Vest, Red - Cabin . . . . . ATA 25-23

25-18-01-04-01 787-8 ATA 25-23
25-18-01-04-02 787-9 ATA 25-24
25-18-01-05 Life Vest, Yellow, Adult/Child ATA 25-25
25-18-01-05-01 787-8 ATA 25-25
25-18-01-05-02 787-9 ATA 25-26
25-18-01-06 Life Vest, Yellow, Adult/Child, Spare ATA 25-27
25-18-01-07 Life Vest, Red - OFCR ATA 25-28
25-25-01 Flight Attendant Seat Assembly (Single Or Dual Position) ATA 25-29
25-25-01-01 Required Flight Attendant Seats ATA 25-29
25-25-01-01A Passengers Carried ATA 25-29
25-25-01-01A-01 787-8 ATA 25-29
25-25-01-01A-02 787-9 ATA 25-30
25-25-01-01B No Passengers Carried ATA 25-31
25-25-01-01B-01 787-8 ATA 25-31
25-25-01-01B-02 787-9 ATA 25-32
25-25-01-02 Excess Flight Attendant Seats ATA 25-33
25-25-02 Passenger Seats ATA 25-34
25-25-02-01 Passenger Seats (includes all Configurations and Locations) ATA 25-34
25-25-02-01A 787-8 ATA 25-34
25-25-02-01B 787-9 ATA 25-35
25-25-02-02 Positioning Controls for Taxi, Takeoff, and Landing (TTL) (Mechanical and/or Electrical) ATA 25-36
25-25-02-02A Seat Secured ATA 25-36
25-25-02-02A-01 787-8 ATA 25-36
25-25-02-02A-02 787-9 ATA 25-37
25-25-02-02B Seat Immovable ATA 25-38
25-25-02-02B-01 787-8 ATA 25-38
25-25-02-02B-02 787-9 ATA 25-39
25-25-02-03 Underseat Baggage Restraining Bars ATA 25-40

25-25-02-03A 787-8 . . . . ATA 25-40
25-25-02-03B 787-9 . . . . ATA 25-41
25-25-02-04 Armrests . . . . ATA 25-42
25-25-02-04-01 With Seat Positioning Controls for Taxi, Takeoff, and Landing (TTL) and/or Other Controls . . . . ATA 25-42
25-25-02-04-01A 787-8 . . . . ATA 25-42
25-25-02-04-01B 787-9 . . . . ATA 25-43
25-25-02-04-02 Without Seat Positioning Controls for Taxi, Takeoff, and Landing (TTL) and/or Other Controls . . . . ATA 25-44
25-25-02-04-02A 787-8 . . . . ATA 25-44
25-25-02-04-02B 787-9 . . . . ATA 25-45
25-25-02-05 Seat Belt Air Bag Restraint Systems . . . . ATA 25-46

25-28-01 Storage Bins/Cabin, Galley And Lavatory Storage Compartments/Closets . . . . . . ATA 25-47
25-28-01A Secured Closed . . . . ATA 25-47
25-28-01B Door Removed or Retractable Door Secured Open . . . . ATA 25-48
25-28-01-01 Multi Latch/Quarter Turn Lug Installations . . . . ATA 25-49
25-28-01-02 Storage Compartment Key Locks . . . . ATA 25-50

25-29-01 Overhead Flight Crew Rest (OFCR) . . . . ATA 25-51
25-29-01A Deactivated Closed . . . . ATA 25-51
25-29-01B Procedures Do Not Require Its Use . . . . ATA 25-52
25-29-01-01 Door . . . . ATA 25-53
25-29-01-02 Door Lock . . . . ATA 25-54
25-29-01-03 Seat . . . . ATA 25-55
25-29-01-04 Bunks . . . . ATA 25-56

25-29-02 Overhead Flight Attendant Rest (OFAR) . . . . ATA 25-57
25-29-02A Deactivated Closed . . . . ATA 25-57
25-29-02B Procedures Do Not Require Its Use . . . . ATA 25-58
25-29-02-01 Door . . . . ATA 25-59
25-29-02-02 Door Lock . . . . ATA 25-60
25-29-02-03 Bunks . . . . ATA 25-61

25-30-01 Galley/Cabin Waste Receptacles Access Door/Covers .... ATA 25-62
25-30-01-01 787-8 .... ATA 25-62
25-30-01-02 787-9 .... ATA 25-63
25-41-01 Exterior Lavatory Ashtrays .... ATA 25-64
25-41-01-01 787-8 .... ATA 25-64
25-41-01-02 787-9 .... ATA 25-65
25-41-02 Lavatory Waste Container Flapper/Access Doors .... ATA 25-66
25-41-02-01 787-8 .... ATA 25-66
25-41-02-02 787-9 .... ATA 25-67
25-41-04 Lavatory Electronic Control Unit (ECU) .... ATA 25-68
25-41-04-01 787-8 .... ATA 25-68
25-41-04-01 787-9 .... ATA 25-69
25-61-01 Emergency Descent Devices (Escape Reels) .... ATA 25-70
25-63-01 Emergency Evacuation Signal System .... ATA 25-71
25-63-02 FASTEN SEAT BELT WHILE SEATED Signs Or Placards .... ATA 25-72
25-63-03 Emergency Locator Transmitter (ELT) (Survival) .... ATA 25-73
25-64-01 Megaphones .... ATA 25-74
25-64-01B No Passengers Carried .... ATA 25-74
25-64-02 Portable Flashlights/Flashlight Holders .... ATA 25-75
25-64-02A Passengers Carried .... ATA 25-75
25-64-02A-01 787-8 .... ATA 25-75
25-64-02A-02 787-9 .... ATA 25-76
25-64-02-02 High Intensity Flashlight .... ATA 25-77
25-64-03 Emergency Medical Equipment .... ATA 25-78
25-64-03-01 Automatic External Defibrillator (AED) and/or Associated Equipment .... ATA 25-78
25-64-03-01A Automatic External Defibrillator (AED) and/or Associated Equipment .... ATA 25-78
25-64-03-02A Both Missing, Incomplete or Inoperative .... ATA 25-79
25-64-03-02 Emergency Medical Kit (EMK) and/or Associated Equipment .... ATA 25-80

25-64-03-02B **One Missing, Incomplete or Inoperative** . . . . . **ATA 25-80**
25-64-03-03 **First Aid Kit (FAK) and/or Associated Equipment** . . . . . **ATA 25-81**
25-64-03-03A **Two Missing, Incomplete or Inoperative** . . . . . **ATA 25-81**
25-64-03-03B **One Missing, Incomplete or Inoperative** . . . . . **ATA 25-82**
25-99-01 **Miscellaneous Loose Equipment** . . . . . **ATA 25-83**
25-99-01-01 **Oxygen Masks, Demonstration** . . . . . **ATA 25-83**
25-99-01-02 **Universal Precaution Kit (UPK)** . . . . . **ATA 25-84**

25-11-01 Flight Crew Seats

25-11-01-01 Power Adjustment Systems

Interval	Installed	Required	Procedure
D	2	0	**(M) (P)**

May be inoperative deactivated.

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MAINTENANCE (M)

Deactivate inoperative flight crew seat power adjustment system (AMM DDG 25-11-01).

1. For inoperative power adjustment system on captain’s seat:
   A. Using a flight deck multi-function display only, open circuit breaker FLT DK SEAT - CAPT and lock with an INOP tag.
2. For inoperative power adjustment system on first officer’s seat:
   A. Using a flight deck multi-function display only, open circuit breaker FLT DK SEAT - FO and lock with an INOP tag.

25-11-01 Flight Crew Seats

25-11-01-02 Manual Adjustment System

25-11-01-02-01 Recline Systems

Interval	Installed	Required	Procedure
A	2	0	**(M) (P)**

May be inoperative provided:

a. Seat is secured in an upright position acceptable to the affected crew member.

b. Repairs are made within two flight days.

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MAINTENANCE (M)

1. Secure the associated seat backrest in a position that is acceptable to the affected flight crew member (AMM DDG 25-11-01).

25-11-01 Flight Crew Seats
25-11-01-02 Manual Adjustment System
25-11-01-02-02 Vertical Adjustments

Interval	Installed	Required	Procedure
B	2	0	**(P)**

May be inoperative provided:

a. Associated vertical power adjustment system operates normally.

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25-11-01 **Flight Crew Seats**
25-11-01-02 **Manual Adjustment System**
25-11-01-02-03 **Armrests**

Interval	Installed	Required	Procedure
B	4	0	**(M) (P)**

May be inoperative provided:

a. Affected armrest is stowed in the retracted position or removed.
b. Seat is acceptable to affected crew member.

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MAINTENANCE (M)

1. Remove or stow the armrest in the retracted position (AMM DDG 25-11-01).

25-11-01 Flight Crew Seats
25-11-01-02 Manual Adjustment System
25-11-01-02-04 Lumbar/Thigh Supports

Interval	Installed	Required	Procedure
C	4	0	**(P)**

May be inoperative provided:

a. Seat is acceptable to the affected crew member.

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25-11-01 **Flight Crew Seats**
25-11-01-02 **Manual Adjustment System**
25-11-01-02-05 **Headrests**

Interval	Installed	Required	Procedure
C	2	0	**(P)**

May be inoperative provided:

a. Seat is acceptable to the affected crew member.

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25-11-01 **Flight Crew Seats**
25-11-01-02 **Manual Adjustment System**
25-11-01-02-06 **Seat Pan Tilt**

Interval	Installed	Required	Procedure
C	2	0	**(M) (P)**

May be inoperative provided:

a. Associated seat pan is secured in the horizontal (untilted) position.
b. Seat is acceptable to affected crew member.

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MAINTENANCE (M)

1. Secure seat in the horizontal (untilted) position using an appropriate lockout pin (AMM DDG 25-11-01).

25-11-02 Observer Seats

25-11-02-01 First Observer Seat (Including Associated Equipment)

25-11-02-01A Passenger Seat Available

Interval	Installed	Required	Procedure
A	1	0	**(P)**

May be inoperative provided:

a. A passenger seat in the passenger cabin is made available to a CAAT inspector for the performance of official duties.

b. Repairs are made within two flight days.

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25-11-02 **Observer Seats**

25-11-02-01 **First Observer Seat (Including Associated Equipment)**

25-11-02-01B **Second Observer's Seat Available**

Interval	Installed	Required	Procedure
A	1	0	**(P)**

May be inoperative provided:

a. Second observer seat is available, and acceptable to a CAAT inspector for the performance of official duties.

b. Repairs are made within two flight days.

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25-11-02 Observer Seats

25-11-02-01 First Observer Seat (Including Associated Equipment)

25-11-02-01C Seat Is Acceptable To Inspector

Interval	Installed	Required	Procedure
A	1	0	**(P)**

May be inoperative provided:

a. First observer seat is acceptable to the CAAT inspector for the performance of official duties.
b. Required minimum safety equipment (safety belt, oxygen and life vest) is available.
c. Repairs are made within two flight days.

Note:
1. These provisos are intended to provide for occupancy of the above seat by a CAAT inspector when the minimum safety equipment (safety belt, oxygen and life vest) is functional and the inspector determines the conditions to be acceptable.
2. The P-i-C will determine if the minimum safety equipment is functional for the other persons authorized to occupy an observer seat.

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25-11-02 **Observer Seats**

25-11-02-02 **Second Observer Seat (Including Associated Equipment)**

Interval	Installed	Required	Procedure
D	1	0	**(P)**

Note: The P-i-C will determine if the minimum safety equipment is functional for the other persons authorized to occupy an observer seat.

25-18-01 Flotation Equipment

25-18-01-01 Life Vest, Yellow, Demonstration

25-18-01-01-01 **787-8** **TQA to TQF**

Interval	Installed	Required	Procedure
C	6	0	**(P)**

May be substituted by passenger-type yellow life vest.

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25-18-01 **Flotation Equipment**

25-18-01-01 **Life Vest, Yellow, Demonstration**

25-18-01-01-02 **787-9** **TWA to TWB**

Interval	Installed	Required	Procedure
C	8	0	**(P)**

May be substituted by passenger-type yellow life vest.

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25-18-01 **Flotation Equipment**

25-18-01-02 **Life Vest, Yellow, Infant**

25-18-01-02-01 **787-8** **TQA to TQF**

Interval	Installed	Required	Procedure
D	16	–	**(P)**

One required for each infant for all routes:

a. May be adult/child type if infant type vests are not available.

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25-18-01 **Flotation Equipment**
25-18-01-02 **Life Vest, Yellow, Infant**
25-18-01-02-02 **787-9**

TWA to TWB

Interval	Installed	Required	Procedure
D	16	–	**(P)**

One required for each infant for all routes:

a. May be adult/child type if infant type vests are not available.

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25-18-01 Flotation Equipment

25-18-01-03 Life Vest, Red - Flight Deck

25-18-01-03-01 **787-8** **TQA to TQF**

Interval	Installed	Required	Procedure
D	4	–	**(P)**

One may be available at each flight deck crew members station and also at each occupied observer seat:

a. May be yellow if red vests are not available.

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25-18-01 **Flotation Equipment**
25-18-01-03 **Life Vest, Red - Flight Deck**
25-18-01-03-02 **787-9**

TWA to TWB

Interval	Installed	Required	Procedure
D	4	–	**(P)**

One may be available at each flight deck crew members station and also at each occupied observer seat:

a. May be yellow if red vests are not available.

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25-18-01 Flotation Equipment

25-18-01-04 Life Vest, Red - Cabin

25-18-01-04-01 **787-8** **TQA to TQF**

Interval	Installed	Required	Procedure
C	13	–	**(P)**

One must be available at each crew member station for all routes:

a. May be yellow if red vests are not available.

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25-18-01 **Flotation Equipment**
25-18-01-04 **Life Vest, Red - Cabin**

25-18-01-04-02 **787-9** **TWA to TWB**

Interval	Installed	Required	Procedure
C	14	–	**(P)**

One must be available at each crew member station for all routes:

a. May be yellow if red vests are not available.

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25-18-01 Flotation Equipment

25-18-01-05 Life Vest, Yellow, Adult/Child

25-18-01-05-01 **787-8** TQA to TQF

Interval	Installed	Required	Procedure
C	256	–	**(P)**

One for each passenger for all routes.

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25-18-01 **Flotation Equipment**
25-18-01-05 **Life Vest, Yellow, Adult/Child**
25-18-01-05-02 **787-9** **TWA to TWB**

Interval	Installed	Required	Procedure
C	298	–	**(P)**

One for each passenger for all routes.

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25-18-01 **Flotation Equipment**

25-18-01-06 **Life Vest, Yellow, Adult/Child, Spare**

Interval	Installed	Required	Procedure
C	12	6	**(P)**

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25-18-01 **Flotation Equipment**

25-18-01-07 **Life Vest, Red - OFCR**

Interval	Installed	Required	Procedure
C	1	–	**(P)**

May be inoperative or missing provided:

a. The OFCR seat is not occupied during takeoff, or landing operations.

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25-25-01 Flight Attendant Seat Assembly (Single or Dual Position)

25-25-01-01 Required Flight Attendant Seats

25-25-01-01A Passengers Carried

25-25-01-01A-01 787-8 **TQA to TQF**

Interval	Installed	Required	Procedure
B	13	8	**(M) (O) (P) (MV)**

One seat position or assembly (dual position) may be inoperative provided:

a. Folding type seat stows automatically or is secured in the retracted position.
b. Passenger seat assigned to flight attendant is placarded RESERVED.
c. Affected seat position or seat assembly is not occupied.
d. Flight attendant(s) displaced by inoperative seat(s) occupies either an adjacent flight attendant seat or the passenger seat which is most accessible to the inoperative seat(s), so as to most effectively perform assigned duties.

Note:
1. An automatic folding seat that will not stow automatically is considered inoperative
2. A seat position with an inoperative or missing restraint system is considered inoperative
3. If one side of a dual seat assembly is inoperative and a flight attendant is displaced to the adjacent seat, the adjacent seat must operate normally.

* * *

MAINTENANCE (M)

1. For automatic stowing inoperative, secure seat in stowed position (AMM DDG 25-25-01).

OPERATIONS (O)

1. The flight attendant assigned to the affected seat must occupy a passenger seat as close to, or closer than, the nearest seated passenger to the associated exit. The flight attendant must be able to reach the assigned emergency exit in essentially the same time as from the normally assigned seat, i.e., a 2 or 3 second time difference is considered “essentially the same time”.

25-25-01 **Flight Attendant Seat Assembly (Single or Dual Position)**
25-25-01-01 **Required Flight Attendant Seats**
25-25-01-01A **Passengers Carried**

25-25-01-01A-02 **787-9** **TWA to TWB**

Interval	Installed	Required	Procedure
C	14	8	**(M) (O) (P) (MV)**

One seat position or assembly (dual position) may be inoperative provided:

a. Folding type seat stows automatically or is secured in the retracted position.
b. Passenger seat assigned to flight attendant is placarded RESERVED.
c. Affected seat position or seat assembly is not occupied.
d. Flight attendant(s) displaced by inoperative seat(s) occupies either an adjacent flight attendant seat or the passenger seat which is most accessible to the inoperative seat(s), so as to most effectively perform assigned duties.

Note:
1. An automatic folding seat that will not stow automatically is considered inoperative.
2. A seat position with an inoperative or missing restraint system is considered inoperative.
3. If one side of a dual seat assembly is inoperative and a flight attendant is displaced to the adjacent seat, the adjacent seat must operate normally.

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MAINTENANCE (M)

1. For automatic stowing inoperative, secure seat in stowed position (AMM DDG 25-25-01).

OPERATIONS (O)

1. The flight attendant assigned to the affected seat must occupy a passenger seat as close to, or closer than, the nearest seated passenger to the associated exit. The flight attendant must be able to reach the assigned emergency exit in essentially the same time as from the normally assigned seat, i.e., a 2 or 3 second time difference is considered “essentially the same time”.

25-25-01 Flight Attendant Seat Assembly (Single or Dual Position)
25-25-01-01 Required Flight Attendant Seats

25-25-01-01B No Passengers Carried

25-25-01-01B-01 **787-8** **TQA to TQF**

Interval	Installed	Required	Procedure
C	13	0	**(M) (O) (P) (MV)**

May be inoperative provided:
a. No passengers are carried.
b. A maximum of 19 persons authorized for non-passenger carrying operations are carried.
c. Folding type seat stows automatically or is secured in the retracted position.
d. Affected seat position or seat assembly is not occupied.

Note: 1. An automatic folding seat that will not stow automatically is considered inoperative.
2. A seat position with an inoperative or missing restraint system is considered inoperative.

MAINTENANCE (M)
1. For automatic stowing inoperative, secure seat in stowed position (AMM DDG 25-25-01).

OPERATIONS (O)
1. No passengers may be carried.
2. A maximum of 19 persons (crew member, company employee, or inspector performing official duties) may be carried.

25-25-01 **Flight Attendant Seat Assembly (Single or Dual Position)**
25-25-01-01 **Required Flight Attendant Seats**
25-25-01-01B **No Passengers Carried**

25-25-01-01B-02 **787-9** **TWA to TWB**

Interval	Installed	Required	Procedure
C	14	0	**(M) (O) (P) (MV)**

May be inoperative provided:
a. No passengers are carried.
b. A maximum of 19 persons authorized for non-passenger carrying operations are carried.
c. Folding type seat stows automatically or is secured in the retracted position.
d. Affected seat position or seat assembly is not occupied.

Note: 1. An automatic folding seat that will not stow automatically is considered inoperative.
2. A seat position with an inoperative or missing restraint system is considered inoperative.

MAINTENANCE (M)
1. For automatic stowing inoperative, secure seat in stowed position (AMM DDG 25-25-01).

OPERATIONS (O)
1. No passengers may be carried.
2. A maximum of 19 persons (crew member, company employee, or inspector performing official duties) may be carried.

25-25-01 Flight Attendant Seat Assembly (Single or Dual Position)

25-25-01-02 Excess Flight Attendant Seats

Interval	Installed	Required	Procedure
C	–	–	**(M) (P) (MV)**

May be inoperative provided:

a. Folding type seat stows automatically or is secured in the retracted position.

b. Affected seat position or seat assembly is not occupied.

Note:
1. An automatic folding seat that will not stow automatically is considered inoperative.
2. A seat position with an inoperative or missing restraint system is considered inoperative.

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MAINTENANCE (M)

1. For automatic stowing inoperative, secure seat in stowed position (AMM DDG 25-25-01).

25-25-02 Passenger Seats

25-25-02-01 Passenger Seats (includes all Configurations and Locations)

25-25-02-01A 787-8

TQA to TQF

Interval	Installed	Required	Procedure
D	256	–	**(P) (MV)**

May be inoperative provided:

a. Seat does not restrict access to any emergency exit, egress route, or main aisle.

b. The affected seat(s) is blocked and placarded "DO NOT OCCUPY".

Note:
1. A seat with an inoperative seat belt or shoulder harness is considered inoperative.
2. Affected seat(s) may include the seat(s) behind and/or adjacent outboard seats.
3. Inoperative seats do not affect the required number of flight attendants.

25-25-02 **Passenger Seats**
25-25-02-01 **Passenger Seats (includes all Configurations and Locations)**

25-25-02-01B **787-9** **TWA to TWB**

Interval	Installed	Required	Procedure
D	298	–	**(P) (MV)**

May be inoperative provided:
a. Seat does not restrict access to any emergency exit, egress route, or main aisle.
b. The affected seat(s) is blocked and placarded "DO NOT OCCUPY".

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Note: 1. A seat with an inoperative seat belt or shoulder harness is considered inoperative.
2. Affected seat(s) may include the seat(s) behind and/or adjacent outboard seats.
3. Inoperative seats do not affect the required number of flight attendants.

25-25-02 **Passenger Seats**

25-25-02-02 **Positioning Controls for Taxi, Takeoff, and Landing (TTL) (Mechanical and/or Electrical)**

25-25-02-02A **Seat Secured**

25-25-02-02A-01 **787-8** **TQA to TQF**

Interval	Installed	Required	Procedure
D	256	–	**(M) (P) (MV)**

May be inoperative and seat occupied provided:
a. Seat is secured in the taxi, takeoff, and landing (TTL) position.

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MAINTENANCE (M)

1. Secure the associated seat in the taxi, takeoff, and landing (TTL) position (AMM DDG 25-25-02).

25-25-02 **Passenger Seats**

25-25-02-02 **Positioning Controls for Taxi, Takeoff, and Landing (TTL) (Mechanical and/or Electrical)**

25-25-02-02A **Seat Secured**

25-25-02-02A-02 **787-9** **TWA to TWB**

Interval	Installed	Required	Procedure
D	298	–	**(M) (P) (MV)**

May be inoperative and seat occupied provided:

a. Seat is secured in the taxi, takeoff, and landing (TTL) position.

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MAINTENANCE (M)

1. Secure the associated seat in the taxi, takeoff, and landing (TTL) position (AMM DDG 25-25-02).

25-25-02 **Passenger Seats**

25-25-02-02 **Positioning Controls for Taxi, Takeoff, and Landing (TTL) (Mechanical and/or Electrical)**

25-25-02-02B **Seat Immovable**

25-25-02-02B-01 **787-8** **TQA to TQF**

Interval	Installed	Required	Procedure
D	256	–	**(P)**

May be inoperative and seat occupied provided:

a. Seat is immovable in the taxi, takeoff, and landing (TTL) position.

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25-25-02 **Passenger Seats**

25-25-02-02 **Positioning Controls for Taxi, Takeoff, and Landing (TTL) (Mechanical and/or Electrical)**

25-25-02-02B **Seat Immovable**

25-25-02-02B-02 **787-9** **TWA to TWB**

Interval	Installed	Required	Procedure
D	298	–	**(P)**

May be inoperative and seat occupied provided:
a. Seat is immovable in the taxi, takeoff, and landing (TTL) position.

25-25-02 Passenger Seats

25-25-02-03 Underseat Baggage Restraining Bars

25-25-02-03A **787-8** **TQA to TQF**

Interval	Installed	Required	Procedure
C	234	–	**(O) (P) (MV)**

May be inoperative provided:

a. Baggage is not stowed under seat with inoperative restraining bar.
b. Associated seat is placarded DO NOT STOW BAGGAGE UNDER THIS SEAT.
c. Cabin crew must be informed of inoperative restraining bar.

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OPERATIONS (O)

1. Cabin crew must ensure baggage is not stowed under seat with inoperative restraining bar.

25-25-02 Passenger Seats

25-25-02-03 Underseat Baggage Restraining Bars

25-25-02-03B **787-9** **TWA to TWB**

Interval	Installed	Required	Procedure
C	268	–	**(O) (P) (MV)**

May be inoperative provided:

a. Baggage is not stowed under seat with inoperative restraining bar.
b. Associated seat is placarded DO NOT STOW BAGGAGE UNDER THIS SEAT.
c. Cabin crew must be informed of inoperative restraining bar.

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OPERATIONS (O)

1. Cabin crew must ensure baggage is not stowed under seat with inoperative restraining bar.

25-25-02 Passenger Seats

25-25-02-04 Armrests

25-25-02-04-01 With Seat Positioning Controls for Taxi, Takeoff, and Landing (TTL) and/or Other Controls

25-25-02-04-01A **787-8** **TQA to TQF**

Interval	Installed	Required	Procedure
D	240	–	**(M) (P) (MV)**

May be inoperative or missing and seat occupied provided:

a. Armrest does not restrict access to any emergency exit, egress route, or main aisle.

b. If armrest with seat control is missing or removed, seat is secured in taxi, takeoff, and landing (TTL) position.

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MAINTENANCE (M)

1. If required, secure the associated seat in the taxi, takeoff, and landing (TTL) position (AMM DDG 25-25-02).

25-25-02 **Passenger Seats**
25-25-02-04 **Armrests**
25-25-02-04-01 **With Seat Positioning Controls for Taxi, Takeoff, and Landing (TTL) and/or Other Controls**
25-25-02-04-01B **787-9** **TWA to TWB**

Interval	Installed	Required	Procedure
D	308	–	**(M) (P) (MV)**

May be inoperative or missing and seat occupied provided:

a. Armrest does not restrict access to any emergency exit, egress route, or main aisle.
b. If armrest with seat control is missing or removed, seat is secured in taxi, takeoff, and landing (TTL) position.

MAINTENANCE (M)

1. If required, secure the associated seat in the taxi, takeoff, and landing (TTL) position (AMM DDG 25-25-02).

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25-25-02 Passenger Seats

25-25-02-04 Armrests

25-25-02-04-02 Without Seat Positioning Controls for Taxi, Takeoff, and Landing (TTL) and/or Other Controls

25-25-02-04-02A **787-8** **TQA to TQF**

Interval	Installed	Required	Procedure
D	116	–	**(P) (MV)**

May be inoperative or missing and seat occupied provided:

a. It does not restrict access to any emergency exit, egress route, or main aisle.

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25-25-02 **Passenger Seats**
25-25-02-04 **Armrests**
25-25-02-04-02 **Without Seat Positioning Controls for Taxi, Takeoff, and Landing (TTL) and/or Other Controls**
25-25-02-04-02B **787-9** **TWA to TWB**

Interval	Installed	Required	Procedure
D	110	–	**(P) (MV)**

May be inoperative or missing and seat occupied provided:

a. It does not restrict access to any emergency exit, egress route, or main aisle.

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25-25-02 Passenger Seats

25-25-02-05 Seat Belt Air Bag Restraint Systems

TWA to TWB

Interval	Installed	Required	Procedure
D	30	–	**(P) (MV)**

May be inoperative provided:

a. Affected seat is blocked and placarded DO NOT OCCUPY.

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25-28-01 Storage Bins/Cabin, Galley and Lavatory Storage Compartments/Closets

25-28-01A Secured Closed

Interval	Installed	Required	Procedure
C	–	–	**(M) (P)**

May be inoperative provided:

a. Affected bin, compartment or closet is prominently placarded INOPERATIVE —PLEASE DO NOT USE.

b. Any emergency equipment located in affected bin, compartment or closet is considered inoperative.

c. Affected bin, compartment or closet is not used for storage of any items except for those permanently affixed.

Note:

1. For overhead bins, if no partitions are installed, the entire overhead bin is considered inoperative.
2. Proviso is not intended to preclude crewmember inspections.

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MAINTENANCE (M)

1. Secure and placard inoperative bins, compartments or closets closed (AMM DDG 25-28-01).

OPERATIONS NOTE

1. For emergency equipment located in affected compartment, the airplane must also be dispatched using the applicable emergency equipment MEL item.

25-28-01 Storage Bins/Cabin, Galley and Lavatory Storage Compartments/Closets

25-28-01B Door Removed or Retractable Door Secured Open

Interval	Installed	Required	Procedure
C	–	–	**(M) (O) (P)**

May be inoperative provided:

a. For non-retractable doors, affected door is removed.
b. For retractable doors, affected door is removed or secured in the retracted (fully open) position.
c. Affected bin, compartment or closet is not used for storage of any items, except those permanently affixed.
d. Affected bin, compartment or closet is prominently placarded INOPERATIVE —PLEASE DO NOT USE.
e. Passengers are briefed that affected bin, compartment or closet is not to be used.

Note:
1. For overhead bins, if no partitions are installed, the entire overhead bin is considered inoperative.
2. Any emergency equipment located in the affected bin, compartment or closet (permanently affixed) is available for use.

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MAINTENANCE (M)

1. Remove door from associated bin, compartment or closet (AMM DDG 25-28-01).

OPERATIONS (O)

1. Brief crew members and passengers that associated bin, compartment or closet is not used.

25-28-01 Storage Bins/Cabin, Galley and Lavatory Storage Compartments/Closets

25-28-01-01 Multi Latch/Quarter Turn Lug Installations

Interval	Installed	Required	Procedure
C	–	–	**(P)**

One latch/lug per compartment may be inoperative provided:

a. Remaining latch(es)/lug(s) on affected compartments operate normally.
b. If affected compartment is used for a galley cart, the cart remains empty.

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25-28-01 Storage Bins/Cabin, Galley and Lavatory Storage Compartments/Closets

25-28-01-02 Storage Compartment Key Locks

Interval	Installed	Required	Procedure
D	–	0	**(M) (P)**

May be inoperative in the unlocked position provided:

a. Doors can be secured by other means.

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MAINTENANCE (M)

1. Secure inoperative doors (AMM DDG 25-28-01).

25-29-01 Overhead Flight Crew Rest (OFCR)

25-29-01A Deactivated Closed

Interval	Installed	Required	Procedure
C	1	0	**(M) (O) (P)**

May be inoperative provided:

a. OFCR is deactivated closed.
b. Appropriate adjustment to flight crew Flight Duty Period (FDP) times are applied.

Note: This provision is not intended to prohibit OFCR inspections by crew members.

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MAINTENANCE (M)

Deactivate overhead flight crew rest (OFCR) closed (AMM DDG 25-29-01).

1. Remove all baggage and personal items from the OFCR.

   Note: Blankets, pillows and other items normally used may remain.

2. Close the OFCR entrance door.

OPERATIONS (O)

1. The OFCR is not available for in flight use. Remove personal items and do not enter except for inspections by crew members.

   For augmented flight crew operations, flight crew duty periods should be adjusted appropriately

OPERATIONS NOTE

1. The OFCR is not available for in flight use. Remove personal items and do not enter except for inspections by crew members.

25-29-01 Overhead Flight Crew Rest (OFCR)

25-29-01B Procedures Do Not Require Its Use

Interval	Installed	Required	Procedure
C	1	0	**(P)**

May be inoperative provided:

a. Procedures do not require its use.

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25-29-01 Overhead Flight Crew Rest (OFCR)

25-29-01-01 Door

Interval	Installed	Required	Procedure
C	1	0	**(M) (P)**

May be inoperative provided:

a. Associated OFCR door is removed.

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MAINTENANCE (M)

1. Remove the inoperative door (AMM DDG 25-29-01).

25-29-01 **Overhead Flight Crew Rest (OFCR)**

25-29-01-02 **Door Lock**

Interval	Installed	Required	Procedure
C	1	0	**(M) (P)**

May be inoperative provided:

a. OFCR door is verified to open from the outside using the override feature.

b. OFCR door is verified to open and close normally from the inside.

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MAINTENANCE (M)

1. Verify the OFCR door can be opened from the outside using the override feature, and verify the OFCR door opens and closes normally from the inside (AMM DDG 25-29-01).

25-29-01 Overhead Flight Crew Rest (OFCR)

25-29-01-03 Seat

Interval	Installed	Required	Procedure
C	1	0	**(M) (P)**

May be inoperative provided:

a. Seat position or seat assembly is not occupied.

b. Folding type seat stows automatically or is secured in the retracted position.

Note:
1. An automatic folding seat that will not stow automatically is considered inoperative.
2. A seat position with an inoperative or missing restraint system is considered inoperative.

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MAINTENANCE (M)

1. For automatic stowing inoperative, secure seat in stowed position (AMM DDG 25-29-01).

OPERATIONS NOTE

1. For augmented flight crew operations, flight crew duty periods should be adjusted appropriately.

UNCONTROLLED IF DOWNLOADED OR PRINTED

25-29-01 Overhead Flight Crew Rest (OFCR)

25-29-01-04 Bunks

Interval	Installed	Required	Procedure
C	2	0	**(P)**

May be inoperative provided:

a. Bunk is not occupied.

Note: A bunk with an inoperative or missing restraint system is considered inoperative.

OPERATIONS NOTE

1. For augmented flight crew operations, flight crew duty periods should be adjusted appropriately.

25-29-02 Overhead Flight Attendant Rest (OFAR)

25-29-02A Deactivated Closed

Interval	Installed	Required	Procedure
C	1	0	**(M) (P)**

May be inoperative provided:

a. OFAR is deactivated closed.

Note: This provision is not intended to prohibit OFAR inspections by crew members.

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MAINTENANCE (M)

Deactivate the overhead flight attendant rest (OFAR) closed (AMM DDG 25-29-02).

1. Remove all baggage and personal items from the OFAR.
   Note: Blankets, pillows and other items normally used may remain.
2. Close the OFAR entrance door.

OPERATIONS NOTE

1. The OFAR is not available for in flight use. Remove personal items and do not enter except for inspections by crew members.

25-29-02 Overhead Flight Attendant Rest (OFAR)

25-29-02B Procedures Do Not Require Its Use

Interval	Installed	Required	Procedure
D	1	0	**(P)**

May be inoperative provided:

a. Procedures do not require its use.

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25-29-02 Overhead Flight Attendant Rest (OFAR)

25-29-02-01 Door

Interval	Installed	Required	Procedure
C	1	0	**(M) (P)**

May be inoperative provided:

a. Associated OFAR door is removed.

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MAINTENANCE (M)

1. Remove the inoperative door (AMM DDG 25-29-02).

25-29-02 Overhead Flight Attendant Rest (OFAR)

25-29-02-02 Door Lock

Interval	Installed	Required	Procedure
C	1	0	**(M) (P)**

May be inoperative provided:

a. OFAR door is verified to open from the outside using the override feature.

b. OFAR door is verified to open and close normally from the inside.

MAINTENANCE (M)

1. Verify the OFAR door can be opened from the outside using the override feature, and verify the door opens and closes normally from the inside (AMM DDG 25-29-02).

25-29-02 Overhead Flight Attendant Rest (OFAR)

25-29-02-03 Bunks

Interval	Installed	Required	Procedure
C	6	0	**(P)**

May be inoperative provided:

a. Bunk is not occupied.

Note: A bunk with an inoperative or missing restraint system is considered inoperative.

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MAINTENANCE (M)

1. For automatic stowing inoperative, secure seat in stowed position (AMM DDG 25-29-01).

25-30-01 Galley/Cabin Waste Receptacles Access Door/Covers

25-30-01-01 **787-8** **TQA to TQF**

Interval	Installed	Required	Procedure
C	4	–	(M) (O) (P)

May be inoperative provided:

a. Container is empty and access is secured to prevent waste introduction into the compartment.

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MAINTENANCE (M)

1. Empty the receptacle and secure the access door/cover in a manner that will prevent waste from being deposited in the waste compartment/receptacle (AMM DDG 25-30-01).

OPERATIONS (O)

1. Fight crew should coordinate with IM/AP to ensure sufficient galley waste containers are available to accommodate all the waste that may be generated on a flight.

25-30-01 **Galley/Cabin Waste Receptacles Access Door/Covers**

25-30-01-02 **787-9** **TWA to TWB**

Interval	Installed	Required	Procedure
C	5	–	**(M) (O) (P)**

May be inoperative provided:

a. Container is empty and access is secured to prevent waste introduction into the compartment.

MAINTENANCE (M)

1. Empty the receptacle and secure the access door/cover in a manner that will prevent waste from being deposited in the waste compartment/receptacle (AMM DDG 25-30-01).

OPERATIONS (O)

1. Fight crew should coordinate with IM/AP to ensure sufficient galley waste containers are available to accommodate all the waste that may be generated on a flight.

25-41-01 Exterior Lavatory Ashtrays

25-41-01-01 **787-8** **TQA to TQF**

Interval	Installed	Required	Procedure
A	8	4	**(P)**

50% may be operative or missing provided:

a. Repairs are made within 10 calendar days.

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25-41-01 Exterior Lavatory Ashtrays

25-41-01-02 **787-9** **TWA to TWB**

Interval	Installed	Required	Procedure
A	9	5	**(P)**

50% may be operative or missing provided:
a. Repairs are made within 10 calendar days.

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25-41-02 Lavatory Waste Container Flapper/Access Doors

25-41-02-01 **787-8** **TQA to TQF**

Interval	Installed	Required	Procedure
C	8	–	**(M) (P)**

May be inoperative provided:

a. Associated waste container is empty and access is secured to prevent waste introduction into the waste container.
b. Associated lavatory is used only by crew members.
c. Associated lavatory entrance door is locked closed and placarded, INOPERATIVE—PLEASE DO NOT USE.

Note: These provisions are not intended to prohibit lavatory use or inspections by crew members.

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MAINTENANCE (M)

Secure the associated waste container to prevent waste from being introduced (AMM DDG 25-41-02).

1. Empty the associated lavatory waste receptacle.
2. Secure the flapper/access door in a manner that will prevent waste from being deposited into the receptacle.
3. Close and lock the associated lavatory door.

OPERATIONS NOTE

1. Lavatory door should remain locked closed, except for use or inspection by crew members.

25-41-02 Lavatory Waste Container Flapper/Access Doors

25-41-02-02 **787-9** **TWA to TWB**

Interval	Installed	Required	Procedure
A	9	–	**(M) (P)**

May be inoperative provided:

a. Associated waste container is empty and access is secured to prevent waste introduction into the waste container.
b. Associated lavatory is used only by crew members.
c. Associated lavatory entrance door is locked closed and placarded, INOPERATIVE—PLEASE DO NOT USE.

Note: These provisions are not intended to prohibit lavatory use or inspections by crew members.

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MAINTENANCE (M)

Secure the associated waste container to prevent waste from being introduced (AMM DDG 25-41-02).

1. Empty the associated lavatory waste receptacle.
2. Secure the flapper/access door in a manner that will prevent waste from being deposited into the receptacle.
3. Close and lock the associated lavatory door.

OPERATIONS NOTE

1. Lavatory door should remain locked closed, except for use or inspection by crew members

25-41-04 Lavatory Electronic Control Unit (ECU)

25-41-04-01 **787-8** **TQA to TQF**

Interval	Installed	Required	Procedure
C	8	–	**(M) (P)**

May be inoperative provided:

a. Associated component is deactivated.

b. Associated lavatory door is locked closed and placarded, “INOPERATIVE—DO NOT ENTER”.

Note: These provisions are not intended to prohibit lavatory use or inspections by crew members.

MAINTENANCE (M)

Deactivate the inoperative component and lock associated lavatory door (AMM DDG 25-41-04).

1. Deactivate or isolate inoperative lavatory ECU.
2. Close, lock and placard the associated lavatory door.

OPERATIONS NOTE

Lavatory door should remain locked closed, except for use or inspection by crew members.

25-41-04 Lavatory Electronic Control Unit (ECU)

25-41-04-02 **787-9**

TWA to TWB

Interval	Installed	Required	Procedure
C	9	–	**(M) (P)**

May be inoperative provided:

a. Associated component is deactivated.

b. Associated lavatory door is locked closed and placarded, “INOPERATIVE—DO NOT ENTER”.

Note: These provisions are not intended to prohibit lavatory use or inspections by crew members.

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MAINTENANCE (M)

Deactivate the inoperative component and lock associated lavatory door (AMM DDG 25-41-04).

1. Deactivate or isolate inoperative lavatory ECU.
2. Close, lock and placard the associated lavatory door.

OPERATIONS NOTE

Lavatory door should remain locked closed, except for use or inspection by crew members.

25-61-01 Emergency Descent Devices (Escape Reels)

Interval	Installed	Required	Procedure
C	4	2	**(M) (P) (MV)**

May be inoperative or missing provided:

a. The number of flight crew members plus observer seat occupants is limited to the number of operative escape reels installed.

b. Inoperative escape reels are removed.

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MAINTENANCE (M)

1. Remove inoperative escape reels (AMM DDG 25-61-01).

25-63-01 Emergency Evacuation Signal System

Interval	Installed	Required	Procedure
C	1	0	**(O) (P)**

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OPERATIONS (O)

1. Prior to flight, the P-i-C should brief cabin crew members to use PA to initiate an emergency evacuation.

25-63-02 FASTEN SEAT BELT WHILE SEATED Signs or Placards

Interval	Installed	Required	Procedure
C	–	–	**(P)**

One or more signs or placards may be illegible or missing provided:

a. A legible sign or placard is visible from each occupied passenger seat.

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25-63-03 Emergency Locator Transmitter (ELT) (Survival)

Interval	Installed	Required	Procedure
D	1	0	**(P) (MV)**

May be inoperative or removed provided:

a. Fixed emergency locater transmitter operates normally.
b. Operations are not conducted on extended over-water or over uninhabited terrain areas.
c. Flight is not operated to Australia.

Note: Dispatch relief for the Fixed type ELT's is in MEL Item 23-24-02.

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25-64-01 Megaphones

25-64-01B No Passengers Carried

Interval	Installed	Required	Procedure
C	2	0	**(O) (P) (MV)**

May be inoperative or missing provided:

a. No passengers are carried.

b. A maximum of 19 persons authorized for non-passenger carrying operations are carried.

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OPERATIONS (O)

1. No passengers may be carried.
2. A maximum of 19 persons (crew member, company employee, or inspector performing official duties) may be carried.
3. Use the cabin/service Interphone system or PA system instead of megaphones.

25-64-02 Portable Flashlights/Flashlight Holders

25-64-02A Passengers Carried

25-64-02A-01 **787-8** **TQA to TQF**

Interval	Installed	Required	Procedure
C	17	0	**(P)**

May be inoperative or missing provided:

a. Crew member assigned to the affected position has an equivalent operative flashlight readily available.

b. Inoperative flashlight remains in a certified location or is removed from the aircraft.

c. Location placarding is removed or obscured.

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25-64-02 **Portable Flashlights/Flashlight Holders**
25-64-02A **Passengers Carried**

25-64-02A-02 **787-9** **TWA to TWB**

Interval	Installed	Required	Procedure
C	18	0	**(P)**

May be inoperative or missing provided:

a. Crew member assigned to the affected position has an equivalent operative flashlight readily available.
b. Inoperative flashlight remains in a certified location or is removed from the aircraft.
c. Location placarding is removed or obscured.

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25-64-02 **Flashlight Holder Assemblies (Including Flashlight)**

25-64-02-02 **High Intensity Flashlight**

Interval	Installed	Required	Procedure
C	1	0	**(P)**

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25-64-03 Emergency Medical Equipment

25-64-03-01 Automatic External Defibrillator (AED) and/or Associated Equipment

25-64-03-01A Automatic External Defibrillator (AED) and/or Associated Equipment

Interval	Installed	Required	Procedure
A	1	0	**(O) (P)**

May be incomplete, missing or inoperative provided:

a. AED is labeled or placarded in a manner that will identify it as a unit that cannot be mistaken for a fully serviceable unit.
b. Location placarding is removed or obscured.
c. Repairs or replacements are made within one flight.

Note: Medical equipment installed in the aircraft as part of an Emergency Medical Service (EMS) operation is not considered part of the normal complement of equipment. No MEL relief applies to that equipment.

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OPERATIONS (O)

1. Ensure that the AED is resealed in a manner that will identify it as a unit that cannot be mistaken for a fully serviceable unit.

25-64-03 **Emergency Medical Equipment**
25-64-03-02 **Emergency Medical Kit (EMK) and/or Associated Equipment**
25-64-03-02A **Both Missing, Incomplete or Inoperative**

Interval	Installed	Required	Procedure
A	2	0	**(O) (P)**

All may be incomplete, missing or inoperative provided:

a. EMK is resealed in a manner that will identify it as a unit that cannot be mistaken for a fully serviceable unit.
b. Repairs or replacements are made within one flight.
c. Flight time is less than two hours.

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OPERATIONS (O)

1. Ensure that the EMK is resealed in a manner that will identify it as a unit that cannot be mistaken for a fully serviceable unit.

25-64-03 Emergency Medical Equipment

25-64-03-02 Emergency Medical Kit (EMK) and/or Associated Equipment

25-64-03-02B One Missing, Incomplete or Inoperative

Interval	Installed	Required	Procedure
D	2	1	**(O) (P)**

One may be incomplete, missing or inoperative provided:

a. EMK is resealed in a manner that will identify it as a unit that cannot be mistaken for a fully serviceable unit.

b. Location placarding is removed or obscured.

Note: Medical equipment installed in the aircraft as part of an Emergency Medical Service (EMS) operation is not considered part of the normal complement of equipment. No MEL relief applies to that equipment.

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OPERATIONS (O)

1. Ensure that the EMK is resealed in a manner that will identify it as a unit that cannot be mistaken for a fully serviceable unit.

25-64-03 **Emergency Medical Equipment**

25-64-03-03 **First Aid Kit (FAK) and/or Associated Equipment**

25-64-03-03A **Two Missing, Incomplete or Inoperative**

Interval	Installed	Required	Procedure
A	4	2	**(O) (P)**

Only one of the required FAKs may be incomplete or removed provided:

a. The FAK is labeled or placarded in a manner that will identify it as a unit that cannot be mistaken for a fully serviceable unit.
b. Location placarding is removed or obscured.
c. Repairs or replacements are made within one flight.

Note: Medical equipment installed in the aircraft as part of an Emergency Medical Service (EMS) operation is not considered part of the normal complement of equipment.

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OPERATIONS (O)

1. Ensure that the FAK is resealed in a manner that will identify it as a unit that cannot be mistaken for a fully serviceable unit.

25-64-03 Emergency Medical Equipment
25-64-03-03 First Aid Kit (FAK) and/or Associated Equipment
25-64-03-03B One Missing, Incomplete or Inoperative

Interval	Installed	Required	Procedure
D	4	3	**(O) (P)**

One may be incomplete, missing or inoperative provided FAK is resealed in a manner that cannot be mistaken for a fully serviceable unit.

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OPERATIONS (O)

1. Ensure that the FAK is resealed in a manner that cannot be mistaken for a fully serviceable unit.

25-99-01 Miscellaneous Loose Equipment

25-99-01-01 Oxygen Masks, Demonstration

Interval	Installed	Required	Procedure
C	7	0	**(P)**

May be substituted by portable oxygen cylinder mask.

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25-99-01 Miscellaneous Loose Equipment

25-99-01-02 Universal Precaution Kit (UPK)

Interval	Installed	Required	Procedure
D	4	2	**(P)**

Two must be available.

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Table of Contents

ATA 26 **FIRE PROTECTION** .... **ATA 26-1**
Table Of Contents .... ATA 26-1
26-11-01 Engine Fire Detector Elements .... ATA 26-4
  26-11-01-01 Engine Fire Detector Elements .... ATA 26-4
26-11-02 Main Engine Data Concentrator (MEDC) Channels .... ATA 26-5
  26-11-02-01 MEDC Channel A .... ATA 26-5
  26-11-02-02 MEDC Channel B .... ATA 26-7
26-13-01 Lavatory Smoke Detection Systems .... ATA 26-9
  26-13-01A 787-8 .... ATA 26-9
  26-13-01B 787-9 .... ATA 26-10
  26-13-01-01 Lavatory Call Light Smoke Detected Function .... ATA 26-11
    26-13-01-01-01 787-8 .... ATA 26-11
    26-13-01-01-02 787-9 .... ATA 26-12
26-14-01 Overhead Flight Attendant Rest (OFAR) Smoke Detection Systems .... ATA 26-13
  26-14-01-01 Individual Bunk Smoke Detectors .... ATA 26-14
  26-14-01-02 Entrance Area Smoke Detectors .... ATA 26-15
26-14-02 Overhead Flight Crew Rest (OFCR) Smoke Detection Systems .... ATA 26-16
  26-14-02-01 Individual Bunk Smoke Detectors .... ATA 26-17
  26-14-02-02 Entrance Area Smoke Detectors .... ATA 26-18
26-15-01 APU Fire Detection System .... ATA 26-19
  26-15-01A APU Not Used .... ATA 26-19
  26-15-01B APU Used on Ground .... ATA 26-20
  26-15-01-01 APU Fire Detection Loops .... ATA 26-21
26-16-01 Lower Cargo Compartment Smoke Detectors .... ATA 26-22
  26-16-01-01 787-8 .... ATA 26-22
    26-16-01-01A Adjacent Detectors Operate Normally .... ATA 26-22
    26-16-01-01B Adjacent Detectors Inoperative (Cargo Loading Restrictions) .... ATA 26-23
  26-16-01-02 787-9 .... ATA 26-24

26-16-01-02A Adjacent Detectors Operate Normally ATA 26-24
26-16-01-02B Adjacent Detectors Inoperative (Cargo Loading Restrictions) ATA 26-25
26-17-01 Wheel Well Fire Detection System ATA 26-26
26-17-01-01 Wheel Well Fire Temperature Detectors ATA 26-27
26-18-01 Duct Leak Overheat Detection Systems ATA 26-28
26-18-01-01 Duct Leak Overheat Detection Channels ATA 26-29
26-21-01 Fire BTL DISCH Lights (Engine, APU, Cargo) ATA 26-30
26-22-01 APU Fire Extinguishing System ATA 26-31
26-22-02 APU Auto Discharge ATA 26-32
26-23-01 Lower Cargo Compartment Fire Extinguishing Bottles ATA 26-33
26-23-01-01 Bottles 2A, 2B and 2C ATA 26-34
26-23-01-03 Bottle Pressure Monitors ATA 26-35
26-23-02 Lower Cargo Compartment Fire Extinguishing Flow Valves (Forward And Aft) ATA 26-36
26-23-02A One Inoperative ATA 26-36
26-23-02B Both Inoperative ATA 26-37
26-23-03 Lower Cargo Compartment Fire Extinguishing Squib Control Channels ATA 26-38
26-23-03A One Channel Inoperative ATA 26-38
26-23-03B Both Channels Inoperative ATA 26-39
26-23-04 Lower Cargo Compartment Fire Extinguishing Filter/ Regulator ATA 26-40
26-24-01 Lavatory Waste Compartment Fire Extinguishing Systems ATA 26-41
26-24-01A Smoke Detection System Operates Normally ATA 26-41
26-24-01A-01 787-8 ATA 26-41
26-24-01A-02 787-9 ATA 26-42
26-24-01B Lavatory Deactivated ATA 26-43
26-24-01B-01 787-8 ATA 26-43
26-24-01B-02 787-9 ATA 26-44
26-26-01 Portable Fire Extinguishers ATA 26-45
26-26-01-01 Halon Fire Extinguishers ATA 26-45

UNCONTROLLED IF DOWNLOADED OR PRINTED

26-26-01-01-01 **787-8** . . . . **ATA 26-45**
26-26-01-01-02 **787-9** . . . . **ATA 26-46**

26-11-01 Engine Fire Detector Elements

26-11-01-01 Engine Fire Detector Elements

Interval	Installed	Required	Procedure
C	24	12	**(P)**

One element in each detector assembly may be inoperative.

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26-11-02 Main Engine Data Concentrator (MEDC) Channels

26-11-02-01 MEDC Channel A

Interval	Installed	Required	Procedure
A	2	1	**(M) (P)**

One may be inoperative provided:

a. MEDC Channel A is deactivated.
b. MEDC Channel B operates normally on both engines.
c. Associated engine oil quantity indicating system is considered inoperative.
d. Associated hydraulic engine driven pump supply shutoff valve is verified to operate normally.
e. Repairs are made within three flight days

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Note:

1. Associated fire/overheat detection system for the affected engine will operate in single channel mode, annunciated by DET FIRE xA ENG L/R status messages. The airplane must also be dispatched using MEL Item 26-11-01.
2. Associated engine anti-ice is inoperative annunciated by the EAI PRSOV L/R and EAI PRSOV CONTROLLER L/R status messages. The airplane must also be dispatched using MEL Item 30-21-01, 30-21-01-01, or 30-21-01-02.
3. Associated hydraulic system pressure indication is inoperative accompanied by the HYD SYS PRESS SNSR L/R status message. The airplane must also be dispatched using MEL Item 29-31-01.
4. Associated EMP temperature indication is inoperative accompanied by the HYD TEMP IND DEM L/R status message. The airplane must also be dispatched using MEL Item 29-32-01.
5. Associated thrust reverser is inoperative, annunciated by ENG REVERSER L/R status messages. The airplane must also be dispatched using MEL Item 78-31-01.
6. Associated engine oil quantity indication will be blank. The airplane must also be dispatched using MEL Item 79-31-01.
7. Associated Variable Frequency Starter Generator is inoperative annunciated by ELEC GEN SYS L1/R1 status messages. The airplane must also be dispatched using MEL Item 24-22-01-01, 24-22-01-02, or 24-22-01-03.
8. Associated Duct Leak Overheat Detection Channel is inoperative annunciated by DET EAI LEAK L/R CHAN A status messages. The airplane must also be dispatched using MEL Item 26-18-01 or 26-18-01-01.
9. Associated engine anti-ice is inoperative annunciated by the EAI PRESS SENSOR L1/R1 and EAI PRESS SENSOR L2/R2 status messages. The airplane must also be dispatched using MEL Item 30-21-01, 30-21-01-06, or 30-21-01-07.
10. Associated hybraulic reservoir auto-bleed valve system is inoperative annunciated by HYD VLV AUTO BLEED RSVR L/R. The airplane must also be dispatched using MEL item 29-31-03.

MAINTENANCE (M)

Deactivate MEDC channel A (AMM DDG 26-11-02).

1. Using a flight deck multi-function display only, open the appropriate circuit breaker and lock with an INOP tag.
   A. For the left engine MEDC channel inoperative:
      - MEDC CHAN A L ENGINE

   B. For the right engine MEDC channel inoperative:
      - MEDC CHAN A R ENGINE

   Note: Associated hydraulic engine driven pump supply shutoff valve position indication may be degraded, annunciated by HYD VLV SUPPLY PRI PUMP L (R) status message.

   Verify the associated engine driven pump supply shutoff valve (ESSOV) operates normally (AMM DDG 26-11-02).
2. Make sure the P8 panel engine fire switch handle for the associated engine is in the down and locked position.
3. Push the P5 panel HYDRAULIC PRIMARY L(R) ENG switch to the ON position.
4. Make sure the position indicator on the ESSOV is in the open position.
5. On the hydraulic maintenance display, make sure the HYDRAULIC PRIMARY PUMP S/O VLV L(R) is OPEN.
6. Push the P8 panel manual override switch, then pull out the associated engine fire switch handle.
7. Make sure the position indicator on the ESSOV is in the closed position.
8. On the hydraulic maintenance display, make sure the HYDRAULIC PRIMARY PUMP S/O VLV L(R) is CLOSED.
9. Push down the associated engine fire switch handle.
10. Make sure the position indicator on the ESSOV is in the open position.
11. On the hydraulic maintenance display, make sure the HYDRAULIC PRIMARY PUMP S/O VLV L(R) is OPEN.

26-11-02 Main Engine Data Concentrator (MEDC) Channels

26-11-02-02 MEDC Channel B

Interval	Installed	Required	Procedure
C	2	1	**(M) (P)**

One may be inoperative provided:

a. MEDC Channel B is deactivated.
b. MEDC Channel A operates normally on both engines.
c. Associated hydraulic engine driven pump supply shutoff valve is verified to operate normally.

Note:

1. Associated fire/overheat detection system for the affected engine will operate in single channel mode, annunciated by DET FIRE xB ENG L/R status messages. The airplane must also be dispatched using MEL Item 26-11-01.
2. Associated hydraulic EMP pressure indication will be inoperative accompanied by the HYD PRESS IND DEM L/R status message. The airplane must also be dispatched using MEL Item 29-31-02.
3. Associated hydraulic reservoir temperature indication will be inoperative accompanied by the HYD TEMP IND RSVR L/R status message. The airplane must also be dispatched using MEL Item 29-18-04.
4. Associated thrust reverser system is inoperative, annunciated by ENG REVERSER L,R status messages. The airplane must also be dispatched using MEL Item 78-31-01.
5. Associated Variable Frequency Starter Generator is inoperative annunciated by ELEC GEN SYS L2/R2 status messages. The airplane must also be dispatched using MEL Item 24-22-01-01, 24-22-01-02, or 24-22-01-03.
6. Associated Duct Leak Overheat Detection Channel is inoperative annunciated by DET EAI LEAK L/R CHAN B status messages. The airplane must also be dispatched using MEL Item 26-18-01 or 26-18-01-01.
7. Associated hybraulic reservoir auto-bleed valve system is inoperative annunciated by HYD VLV AUTO BLEED RSVR L/R. The airplane must also be dispatched using MEL item 29-31-03.

MAINTENANCE (M)

Deactivate MEDC channel B (AMM DDG 26-11-02).

1. Using a flight deck multi-function display only, open the appropriate circuit breaker and lock with an INOP tag.
   A. For the left engine MEDC channel inoperative:
      - MEDC CHAN B L ENGINE
   B. For the right engine MEDC channel inoperative:
      - MEDC CHAN B R ENGINE

   Note: Associated hydraulic engine driven pump supply shutoff valve position indication may be degraded, annunciated by HYD VLV SUPPLY PRI PUMP L (R) status message.

   Verify the associated engine driven pump supply shutoff valve (ESSOV) operates normally (AMM DDG 26-11-02).

2. Make sure the P8 panel engine fire switch handle for the associated engine is in the down and locked position.
3. Push the P5 panel HYDRAULIC PRIMARY L(R) ENG switch to the ON position.
4. Make sure the position indicator on the ESSOV is in the open position.
5. On the hydraulic maintenance display, make sure the HYDRAULIC PRIMARY PUMP S/O VLV L(R) is OPEN.
6. Push the P8 panel manual override switch, then pull out the associated engine fire switch handle.
7. Make sure the position indicator on the ESSOV is in the closed position.
8. On the hydraulic maintenance display, make sure the HYDRAULIC PRIMARY PUMP S/O VLV L(R) is CLOSED.
9. Push down the associated engine fire switch handle.
10. Make sure the position indicator on the ESSOV is in the open position.
11. On the hydraulic maintenance display, make sure the HYDRAULIC PRIMARY PUMP S/O VLV L(R) is OPEN.

26-13-01 Lavatory Smoke Detection Systems

26-13-01A **787-8** **TQA to TQF**

Interval	Installed	Required	Procedure
C	8	–	**(M) (O) (P)**

For each lavatory, may be inoperative provided associated:

a. Lavatory waste receptacle is empty.
b. Lavatory door is locked closed and placarded, INOPERATIVE—PLEASE DO NOT USE.
c. Lavatory is used only by crew members.

Note: These provisions are not intended to prohibit lavatory use or inspections by crew members.

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MAINTENANCE (M)

Deactivate the associated lavatory (AMM DDG 26-13-01).

1. Empty the lavatory waste receptacle.
2. If necessary, deactivate the inoperative smoke detector.
    A. Open the appropriate LAV PWR AC- and LAV PWR DC- circuit breakers and lock with a DO NOT CLOSE tag.
    B. Remove the inoperative smoke detector.
    C. Disconnect, cap and stow the electrical connector from the detector.
    D. Reinstall smoke detector.
    E. Close the appropriate LAV PWR AC- and LAV PWR DC- circuit breakers.
3. Close, lock and placard the lavatory door.

OPERATIONS (O)

1. Lavatory door should remain locked closed, except for use or inspection by crew members.

26-13-01 **Lavatory Smoke Detection Systems**

26-13-01B **787-9**

TWA to TWB

Interval	Installed	Required	Procedure
C	9	–	**(M) (O) (P)**

For each lavatory, may be inoperative provided associated:

a. Lavatory waste receptacle is empty.

b. Lavatory door is locked closed and placarded, INOPERATIVE—PLEASE DO NOT USE.

c. Lavatory is used only by crew members.

Note: These provisions are not intended to prohibit lavatory use or inspections by crew members.

MAINTENANCE (M)

Deactivate the associated lavatory (AMM DDG 26-13-01).

1. Empty the lavatory waste receptacle.
2. If necessary, deactivate the inoperative smoke detector.
    A. Open the appropriate LAV PWR AC- and LAV PWR DC- circuit breakers and lock with a DO NOT CLOSE tag.
    B. Remove the inoperative smoke detector.
    C. Disconnect, cap and stow the electrical connector from the detector.
    D. Reinstall smoke detector.
    E. Close the appropriate LAV PWR AC- and LAV PWR DC- circuit breakers.
3. Close, lock and placard the lavatory door.

OPERATIONS (O)

1. Lavatory door should remain locked closed, except for use or inspection by crew members.

26-13-01 Lavatory Smoke Detection Systems

26-13-01-01 Lavatory Call Light Smoke Detected Function

26-13-01-01-01 **787-8** **TQA to TQF**

Interval	Installed	Required	Procedure
C	8	0	**(P)**

Note: Attendant call and occupancy indications are GMM.

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26-13-01 **Lavatory Smoke Detection Systems**
26-13-01-01 **Lavatory Call Light Smoke Detected Function**
26-13-01-01-02 **787-9** **TWA to TWB**

Interval	Installed	Required	Procedure
C	9	0	**(P)**

Note: Attendant call and occupancy indications are GMM.

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26-14-01 Overhead Flight Attendant Rest (OFAR) Smoke Detection Systems

Interval	Installed	Required	Procedure
C	8	0	**(M) (O) (P)**

May be inoperative provided:

a. Inoperative smoke detection system is deactivated.
b. OFAR is deactivated closed.
c. Lavatory is used only by crew members.

Note: These provisions are not intended to prohibit OFAR inspections by crew members.

MAINTENANCE (M)

Deactivate the inoperative smoke detection system and deactivate the OFAR closed (AMM DDG 26-14-01).

1. Deactivate the associated attendant rest smoke detection system.
   A. Using a flight deck multi-function display only, open circuit breaker SMOKE DETECTOR-OFAR and lock with an INOP tag.
2. Deactivate the associated attendant rest area closed.
   A. Remove all baggage and personal items from the associated attendant rest.
      Note: Blankets, pillows and other items normally used in the crew rest may remain.
   B. Close the associated attendant rest entrance door.

OPERATIONS (O)

1. The crew rest area is not available for inflight use. Remove personal items and do not enter except for inspections by crew members.

26-14-01 Overhead Flight Attendant Rest (OFAR) Smoke Detection Systems

26-14-01-01 Individual Bunk Smoke Detectors

Interval	Installed	Required	Procedure
C	6	0	**(M) (O) (P)**

May be inoperative provided:

a. Associated bunk is not used and personal items are removed.

b. A conspicuous barrier strap or rope is placed across the associated bunk with a placard attached stating that the bunk is not to be used.

MAINTENANCE (M)

Deactivate associated bunk (AMM DDG 26-14-01).

1. Remove all personal items from the associated bunk.
2. Place a barrier strap or rope across the associated bunk.

OPERATIONS (O)

1. The bunk associated with the inoperative smoke detector is not available for inflight use. Remove personal items from the bunk.

26-14-01 Overhead Flight Attendant Rest (OFAR) Smoke Detection Systems

26-14-01-02 Entrance Area Smoke Detectors

Interval	Installed	Required	Procedure
C	2	1	**(P)**

One may be inoperative provided:

a. Bunk smoke detectors operate normally.
b. For entrance area curtain installed, entrance area curtain is secured open or removed.

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26-14-02 Overhead Flight Crew Rest (OFCR) Smoke Detection Systems

Interval	Installed	Required	Procedure
C	4	0	**(M) (O) (P)**

May be inoperative provided:

a. Inoperative smoke detection system is deactivated.
b. OFCR is deactivated closed.

Note: These provisions are not intended to prohibit OFCR inspections by crew members.

MAINTENANCE (M)

Deactivate the inoperative smoke detection system and deactivate the OFCR closed (AMM DDG 26-14-02).

1. Deactivate the crew rest smoke detection system.
   A. Using a flight deck multi-function display only, open circuit breaker SMOKE DETECTOR-OFCR and lock with an INOP tag.
2. Deactivate the associated crew rest area closed.
   A. Remove all baggage and personal items from the associated crew/ attendant rest.
      Note: Blankets, pillows and other items normally used in the crew rest may remain.
   B. Close the associated crew rest entrance door.

OPERATIONS (O)

1. The crew rest area is not available for inflight use. Remove personal items and do not enter except for inspections by crew members.

26-14-02 Overhead Flight Crew Rest (OFCR) Smoke Detection Systems

26-14-02-01 Individual Bunk Smoke Detectors

Interval	Installed	Required	Procedure
C	2	0	**(M) (O) (P)**

May be inoperative provided:

a. Associated bunk is not used and personal items are removed.
b. A conspicuous barrier strap or rope is placed across the associated bunk with a placard attached stating that the bunk is not to be used.

MAINTENANCE (M)

Deactivate associated bunk (AMM DDG 26-14-02).

1. Remove all personal items from the associated bunk.
2. Place a barrier strap or rope across the associated bunk.

OPERATIONS (O)

1. The bunk associated with the inoperative smoke detector is not available for inflight use. Remove personal items from the bunk.

26-14-02 Overhead Flight Crew Rest (OFCR) Smoke Detection Systems

26-14-02-02 Entrance Area Smoke Detectors

Interval	Installed	Required	Procedure
C	2	1	**(P)**

One may be inoperative provided:

a. Bunk smoke detectors operate normally.
b. For entrance area curtain installed, entrance area curtain is secured open or removed.

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26-15-01 APU Fire Detection System

26-15-01A APU Not Used

Interval	Installed	Required	Procedure
C	1	0	**(O) (P) (MV)**

May be inoperative provided:

a. APU selector switch remains in OFF position.
b. VFSG systems operate normally.
c. Flight remains within 180 minutes of landing at a suitable airport.

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MAINTENANCE NOTE

1. The APU fire detection system is inoperative when both DET FIRE LOOP A APU and DET FIRE LOOP B APU status messages are displayed.

OPERATIONS(O)

1. Use MEL Item 49-11-01 (O) procedure.

26-15-01 APU Fire Detection System

26-15-01B APU Used on Ground

Interval	Installed	Required	Procedure
C	1	0	**(M) (O) (P) (MV)**

May be inoperative provided:

a. APU is used for ground operations only.
b. APU is continuously monitored by ground personnel when operating.
c. APU external control system operates normally.
d. APU is not used during taxi.
e. VFSG systems operate normally.
f. Flight remains within 180 minutes of landing at a suitable airport.

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MAINTENANCE (M)

Note: 1. A VFSG system is considered to be operating normally if its associated status message (ELEC GEN SYS L1, L2, R1 or R2) is not displayed.

2. The APU fire detection system is inoperative when both DET FIRE LOOP A APU and DET FIRE LOOP B APU status messages are displayed.

The APU must be continually visually monitored when the APU is used on the ground. If an APU fire is observed, the APU fire extinguisher must be manually discharged using the APU fire shutdown switch on the P40 service and APU shutdown panel (nose gear) or the APU and Cargo Fire Panel (P5) APU fire switch.

OPERATIONS (O)

1. Use MEL Item 49-11-01 (O) procedure.

26-15-01 APU Fire Detection System

26-15-01-01 APU Fire Detection Loops

Interval	Installed	Required	Procedure
C	2	1	**(P)**

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UNCONTROLLED IF DOWNLOADED OR PRINTED

26-16-01 Lower Cargo Compartment Smoke Detectors

26-16-01-01 787-8

TQA to TQF

26-16-01-01A Adjacent Detectors Operate Normally

Interval	Installed	Required	Procedure
C	22	16	**(P)**

May be inoperative provided:

a. Adjacent cargo compartment smoke detectors operate normally.

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Note: Detectors are interchangeable.

OPERATIONS NOTE

1. Adjacent smoke detectors in the forward compartment are all detectors immediately next to the inoperative detector fore and/or aft, to the side, or diagonally. Detectors in the aft/bulk compartment are staggered. Adjacent detectors in the aft/bulk compartment are all detectors immediately next to the inoperative detector fore and/or aft, or diagonally fore and/or aft.

26-16-01 **Lower Cargo Compartment Smoke Detectors**
26-16-01-01 **787-8**

TQA to TQF

26-16-01-01B **Adjacent Detectors Inoperative (Cargo Loading Restrictions)**

Interval	Installed	Required	Procedure
C	22	0	**(O) (P) (MV)**

May be inoperative provided:

a. Cargo compartments must remain empty except for ballast, empty cargo containers (ballast may be loaded in ULDs), fly away kits, pallets, and cargo restraint components.

Note:
1. Landing gear tires, cans of hydraulic oil, cleaning solvents, or any item(s) that may be potential sources of smoke, fume, or fire must be removed from Airborne Maintenance Kit (AMK).
2. Dry shingle, coarse round gravel or pebbles can be used as ballast.

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Note: Detectors are interchangeable.

OPERATIONS (O)

1. Cargo compartments must remain empty in the zone associated with the inoperative smoke detectors, except for ballast, empty cargo containers (ballast may be loaded in ULDs), fly away kits, pallets, and cargo restraint components.

   The zone associated with the inoperative detectors includes the row or rows containing the inoperative detectors to the next row of operating detectors. The table defines the cargo exclusion zone when inoperative detectors are located in the forward or aft rows of either the forward and aft/bulk compartments. The table does not contain all of the allowable combinations of inoperative detectors.

Cargo Compartment	Inoperative Detectors	No Cargo Zone
FWD	1L and 1R	Forward of STA 435
FWD	7L and 7R	Aft of STA 734
AFT/BULK	1L and 1R	Forward of STA 1455
AFT/BULK	4L and 4R	Aft of STA 1629

26-16-01 Lower Cargo Compartment Smoke Detectors

26-16-01-02 787-9

TWA to TWB

26-16-01-02A Adjacent Detectors Operate Normally

Interval	Installed	Required	Procedure
C	29	21	**(P) (MV)**

May be inoperative provided:

a. Adjacent cargo compartment smoke detectors operate normally.

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Note: Detectors are interchangeable.

OPERATIONS NOTE

1. Adjacent smoke detectors in the forward compartment are all detectors immediately next to the inoperative detector fore and/or aft, to the side, or diagonally. Detectors in the aft/bulk compartment are staggered. Adjacent detectors in the aft/bulk compartment are all detectors immediately next to the inoperative detector fore and/or aft, or diagonally fore and/or aft.

26-16-01 **Lower Cargo Compartment Smoke Detectors**
26-16-01-02 **787-9** **TWA to TWB**

26-16-01-02B **Adjacent Detectors Inoperative (Cargo Loading Restrictions)**

Interval	Installed	Required	Procedure
C	29	0	**(O) (P) (MV)**

May be inoperative provided:

a. Cargo compartments must remain empty except for ballast, empty cargo containers (ballast may be loaded in ULDs), fly away kits, pallets, and cargo restraint components.

Note: 1. Landing gear tires, cans of hydraulic oil, cleaning solvents, or any item(s) that may be potential sources of smoke, fume, or fire must be removed from Airborne Maintenance Kit (AMK).

2. Dry shingle, coarse round gravel or pebbles can be used as ballast.

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Note: Detectors are interchangeable.

OPERATIONS (O)

1. Cargo compartments must remain empty in the zone associated with the inoperative smoke detectors, except for ballast, empty cargo containers (ballast may be loaded in ULDs), fly away kits, pallets, and cargo restraint components.

   The zone associated with the inoperative detectors includes the row or rows containing the inoperative detectors to the next row of operating detectors. The table defines the cargo exclusion zone when inoperative detectors are located in the forward or aft rows of either the forward and aft/bulk compartments. The table does not contain all of the allowable combinations of inoperative detectors.

Cargo Compartment	Inoperative Detectors	No Cargo Zone
FWD	1L and 1R	Forward of STA 435
FWD	9L and 9R	Aft of STA 735
AFT/BULK	1L and 1R	Forward of STA 1401+54
AFT/BULK	5L and 6R	Aft of STA 1637

26-17-01 Wheel Well Fire Detection System

Interval	Installed	Required	Procedure
C	1	0	**(O) (P) (MV)**

May be inoperative provided:

a. Use of flaps 20 for takeoff is prohibited.

b. Landing gear remain extended for 10 minutes after takeoff.

Note: In case of engine failure after V1, landing gear should be retracted until takeoff obstacles are cleared and airplane is 1,500 feet above the airport.

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OPERATIONS(O)

1. For 787-8: **TQA to TQF**
   - A. Increase flight planning fuel by 1,225 kg.
   - B. Use of flaps 20 for takeoff is prohibited.
   - C. After takeoff, leave the landing gear extended for a minimum of ten minutes.
   - D. In case of engine failure after V1, landing gear should be retracted after takeoff until a minimum of 1,500 feet. Extending gear after engine failure can cause the airplane to descend. Extend the gear after terrain clearance is assured.
   - E. It is not necessary to apply landing gear extended takeoff performance adjustments when dispatching under this item.
2. For 787-9: **TWA to TWB**
   - A. Increase flight planning fuel by 1,315 kg.
   - B. Use of flaps 20 for takeoff is prohibited.
   - C. After takeoff, leave the landing gear extended for a minimum of ten minutes.
   - D. In case of engine failure after V1, landing gear should be retracted after takeoff until a minimum of 1,500 feet. Extending gear after engine failure can cause the airplane to descend. Extend the gear after terrain clearance is assured.
   - E. It is not necessary to apply landing gear extended takeoff performance adjustments when dispatching under this item.

26-17-01 Wheel Well Fire Detection System

26-17-01-01 Wheel Well Fire Temperature Detectors

Interval	Installed	Required	Procedure
C	12	8	**(P)**

One detector per wheel axle may be inoperative provided:

a. Outboard detectors operate normally.

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MAINTENANCE NOTE

1. Outboard detectors and associated status messages are shown in the following table:

Detector	Status Message
Left Forward	DET 1 WHEEL WELL L
Left Aft	DET 6 WHEEL WELL L
Right Forward	DET 3 WHEEL WELL R
Right Aft	DET 4 WHEEL WELL R

Detectors 1, 2 and 3 are associated with the forward axle of the landing gear truck and detectors 4, 5 and 6 are associated with the rear axle of the landing gear truck.

Wheel well fire temperature sensors are interchangeable.

26-18-01 Duct Leak Overheat Detection Systems

Interval	Installed	Required	Procedure
C	2	1	**(P) (MV)**

May be inoperative provided:

a. Associated engine anti-ice control switch remains OFF.
b. Airplane is not operated in known or forecast icing conditions.
c. Flight remains within 120 minutes of landing at a suitable airport.

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26-18-01 Duct Leak Overheat Detection Systems

26-18-01-01 Duct Leak Overheat Detection Channels

Interval	Installed	Required	Procedure
C	4	2	**(P)**

One channel per engine may be inoperative.

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UNCONTROLLED IF DOWNLOADED OR PRINTED

26-21-01 Fire BTL DISCH Lights (Engine, APU, Cargo)

Interval	Installed	Required	Procedure
C	4	0	**(P)**

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UNCONTROLLED IF DOWNLOADED OR PRINTED

26-22-01 APU Fire Extinguishing System

Interval	Installed	Required	Procedure
C	1	0	**(O) (P) (MV)**

May be inoperative provided:

a. APU is not used.
b. VFSG systems operate normally.
c. Flight remains within 180 minutes of landing at a suitable airport.

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MAINTENANCE NOTE

1. A VFSG system is considered to be operating normally if its associated status message (ELEC GEN SYS L1, L2, R1 or R2) is not displayed.

OPERATIONS (O)

1. Use MEL Item 49-11-01 (O) procedure.

26-22-02 APU Auto Discharge

Interval	Installed	Required	Procedure
C	1	0	**(M) (P)**

May be inoperative provided:

a. APU fire warning indicator is monitored during APU ground operations.

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MAINTENANCE (M)

1. During APU ground operations, monitor the APU for fire warnings. The APU fire extinguisher must be manually discharged using either the APU fire shutdown switch on the P40 service and APU shutdown panel (nose gear) or the APU and Cargo Fire Panel (P5) APU fire switch.

UNCONTROLLED IF DOWNLOADED OR PRINTED

26-23-01 Lower Cargo Compartment Fire Extinguishing Bottles

Interval	Installed	Required	Procedure
C	5	0	**(O) (P) (MV)**

May be inoperative provided:

a. Cargo compartments must remain empty except for ballast, empty cargo containers (ballast may be loaded in ULDs), fly away kits, pallets, and cargo restraint components.

Note:
1. Landing gear tires, cans of hydraulic oil, cleaning solvents, or any item(s) that may be potential sources of smoke, fume, or fire must be removed from Airborne Maintenance Kit (AMK).
2. Dry shingle, coarse round gravel or pebbles can be used as ballast.

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OPERATIONS (O)

1. The lower cargo compartments must remain empty, except for ballast, empty cargo containers (ballast may be loaded in ULDs), fly away kits, pallets, and cargo restraint components.

   Note: Cans of hydraulic oil, cleaning solvents, or any item(s) that may be potential sources of smoke, fume, or fire must be removed from aircraft maintenance kits.

26-23-01 Lower Cargo Compartment Fire Extinguishing Bottles

26-23-01-01 Bottles 2A, 2B and 2C

Interval	Installed	Required	Procedure
C	3	1	**(M) (O) (P) (MV)**

May be inoperative provided:

a. Bottle is deactivated.
b. Airplane is operated pressurized.
c. Total fire extinguisher bottle capability is greater than or equal to maximum time to land at a suitable airport.

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MAINTENANCE (M)

Deactivate the inoperative fire extinguishing bottle (AMM DDG 26-23-01).

1. Open following circuit breakers and lock with a DO NOT CLOSE tag:
    - SMCU-CHAN 1A
    - SMCU-CHAN 2A
    - SMOKE DETECTOR-FWD CARGO 2B
2. Gain access to the inoperative bottle.
3. Disconnect, cap and stow the electrical connector from the squib for the associated bottle.
4. Put the protective cap, attached to the bottle, on the squib.
5. Remove the discharge line from the fire bottle discharge outlet.
6. Cap the discharge head of the bottle with a non-recoil cap (Kidde part number 844497).
7. Install a pressure holding plug (BACP20AU10D) in the discharge tube.
8. Close the following circuit breakers:
    - SMCU-CHAN 1A
    - SMCU-CHAN 2A
    - SMOKE DETECTOR-FWD CARGO 2B
9. Confirm fire bottle status message is displayed only for the deactivated bottle.

OPERATIONS (O)

1. Maximum time to land at suitable airport must be less than or equal to the sum of the suppression time capability for all operating low rate discharge fire extinguisher bottles. Add the suppression times for all operative bottles to obtain the maximum suppression time. The required additional 15 minutes to account for holding at the landing airport is not included in the maximum time to land at a suitable airport since it is provided by the high rate discharge bottles. The low rate discharge bottles do not begin to discharge until 15 minutes after the cargo fire suppression system is activated and the high rate bottles discharge.

Suppression Time per Fire Extinguisher Bottle

Fire Extinguisher Bottle	Suppression Time Capability per Bottle (Minutes)
2A	60
2B	60
2C	60

26-23-01 Lower Cargo Compartment Fire Extinguishing Bottles

26-23-01-03 Bottle Pressure Monitors

Interval	Installed	Required	Procedure
C	3	0	**(M) (P)**

May be inoperative provided:

a. Associated bottle is verified to be fully charged.

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MAINTENANCE (M)

Note: The associated bottle status message will be displayed for a bottle when the bottle pressure is low or for an internal failure of the pressure monitor device when the bottle pressure is normal.

Verify the associated bottle is full (AMM DDG 26-23-01).

1. Remove, weigh and reinstall the associated bottle.
   A. Remove the associated bottle from the airplane.
   B. Weigh the bottle. The bottle must weigh the same as the weight on the data plate +/- 0.3 lb.

      Note: The measured weight of the bottle includes the charged bottle, the inspection tag on the bottle, the swivel assemblies and the two faraday caps that are connected to the pressure switch and the squib with a lanyard. If the squib cartridges are not installed on the fire extinguisher bottle, do not install them. Weigh the squib cartridges as loose parts and include the weight of the squib cartridges in the measured weight. If the squib cartridges are installed, weigh the bottle with the cartridges installed.
   C. Reinstall the bottle in the airplane. It is not necessary to perform the bottle pressure monitor operational test associated with this procedure.
   D. Confirm bottle pressure status message is displayed only for the bottle with the inoperative pressure transducer.

26-23-02 Lower Cargo Compartment Fire Extinguishing Flow Valves (Forward and Aft)

26-23-02A One Inoperative

Interval	Installed	Required	Procedure
C	2	1	**(M) (O) (P) (MV)**

One may be inoperative provided:

a. Flow valve is deactivated.

b. Cargo compartments must remain empty except for ballast, empty cargo containers (ballast may be loaded in ULDs), fly away kits, pallets, and cargo restraint components.

Note: 1. Landing gear tires, cans of hydraulic oil, cleaning solvents, or any item(s) that may be potential sources of smoke, fume, or fire must be removed from Airborne Maintenance Kit (AMK).

2. Dry shingle, coarse round gravel or pebbles can be used as ballast.

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MAINTENANCE (M)

Deactivate the inoperative flow valve (AMM DDG 26-23-02).

1. Open the following circuit breakers and lock with a DO NOT CLOSE tag:
   - SMCU-CHAN 1A
   - SMCU-CHAN 2A
2. Gain access to the inoperative fire extinguishing flow valve.
3. Disconnect, cap and stow the electrical connectors from the flow valve squib.
4. Cap the squib.
5. Remove the inlet tube from the airplane.
   A. Disconnect the inlet tube from the inoperative flow valve and from the tube fitting.
   B. Install a plug in the two ends of the inlet tube.
6. Put a protective cap (BACC14AD12DL) on the flow valve inlet and the tube fitting.
7. Close the following circuit breakers:
   - SMCU-CHAN 1A
   - SMCU-CHAN 2A
8. Confirm the status message for the operating flow valve is not displayed.

OPERATIONS (O)

1. The associated cargo compartment must remain empty, except for ballast, empty cargo containers (ballast may be loaded in ULDs), fly away kits, pallets, and cargo restraint components.

Note: Cans of hydraulic oil, cleaning solvents, or any item(s) that may be potential sources of smoke, fume, or fire must be removed from aircraft maintenance kits.

26-23-02 **Lower Cargo Compartment Fire Extinguishing Flow Valves (Forward and Aft)**

26-23-02B **Both Inoperative**

Interval	Installed	Required	Procedure
C	2	0	**(O) (P) (MV)**

May be inoperative provided:

a. Cargo compartments must remain empty except for ballast, empty cargo containers (ballast may be loaded in ULDs), fly away kits, pallets, and cargo restraint components.

Note: 1. Landing gear tires, cans of hydraulic oil, cleaning solvents, or any item(s) that may be potential sources of smoke, fume, or fire must be removed from Airborne Maintenance Kit (AMK).

2. Dry shingle, coarse round gravel or pebbles can be used as ballast.

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OPERATIONS (O)

1. The lower cargo compartments must remain empty, except for ballast, empty cargo containers (ballast may be loaded in ULDs), fly away kits, pallets, and cargo restraint components.

   Note: Cans of hydraulic oil, cleaning solvents, or any item(s) that may be potential sources of smoke, fume, or fire must be removed from aircraft maintenance kits.

26-23-03 Lower Cargo Compartment Fire Extinguishing Squib Control Channels

26-23-03A One Channel Inoperative

Interval	Installed	Required	Procedure
C	2	1	**(P)**

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26-23-03 Lower Cargo Compartment Fire Extinguishing Squib Control Channels

26-23-03B Both Channels Inoperative

Interval	Installed	Required	Procedure
C	2	0	**(O) (P) (MV)**

May be inoperative provided:

a. Cargo compartments must remain empty except for ballast, empty cargo containers (ballast may be loaded in ULDs), fly away kits, pallets, and cargo restraint components.

Note:
1. Landing gear tires, cans of hydraulic oil, cleaning solvents, or any item(s) that may be potential sources of smoke, fume, or fire must be removed from Airborne Maintenance Kit (AMK).
2. Dry shingle, coarse round gravel or pebbles can be used as ballast.

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OPERATIONS (O)

1. The lower cargo compartments must remain empty, except for ballast, empty cargo containers (ballast may be loaded in ULDs), fly away kits, pallets, and cargo restraint components.

   Note: Cans of hydraulic oil, cleaning solvents, or any item(s) that may be potential sources of smoke, fume, or fire must be removed from aircraft maintenance kits.

26-23-04 Lower Cargo Compartment Fire Extinguishing Filter/ Regulator

Interval	Installed	Required	Procedure
C	1	0	**(O) (P)**

May be inoperative provided:

a. Cargo compartments must remain empty except for ballast, empty cargo containers (ballast may be loaded in ULDs), fly away kits, pallets, and cargo restraint components.

Note:
1. Landing gear tires, cans of hydraulic oil, cleaning solvents, or any item(s) that may be potential sources of smoke, fume, or fire must be removed from Airborne Maintenance Kit (AMK).
2. Dry shingle, coarse round gravel or pebbles can be used as ballast.

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OPERATIONS (O)

1. The lower cargo compartments must remain empty, except for ballast, empty cargo containers (ballast may be loaded in ULDs), fly away kits, pallets, and cargo restraint components.

26-24-01 Lavatory Waste Compartment Fire Extinguishing Systems

26-24-01A Smoke Detection System Operates Normally

26-24-01A-01 **787-8** **TQA to TQF**

Interval	Installed	Required	Procedure
C	8	–	(O) (P)

May be inoperative for each lavatory provided:

a. Associated lavatory smoke detection system operates normally.

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OPERATIONS (O)

1. If a lavatory fire occurs, extinguish the fire with a portable fire extinguisher.

UNCONTROLLED IF DOWNLOADED OR PRINTED

26-24-01 **Lavatory Waste Compartment Fire Extinguishing Systems**
26-24-01A **Smoke Detection System Operates Normally**
26-24-01A-02 **787-9** **TWA to TWB**

Interval	Installed	Required	Procedure
C	9	–	(O) (P)

May be inoperative for each lavatory provided:

a. Associated lavatory smoke detection system operates normally.

OPERATIONS (O)

1. If a lavatory fire occurs, extinguish the fire with a portable fire extinguisher.

26-24-01 Lavatory Waste Compartment Fire Extinguishing Systems

26-24-01B Lavatory Deactivated

26-24-01B-01 **787-8** **TQA to TQF**

Interval	Installed	Required	Procedure
C	8	–	**(M) (O) (P)**

May be inoperative for each lavatory provided:

a. Lavatory waste receptacle is empty.
b. Lavatory door is locked closed and placarded, INOPERATIVE—PLEASE DO NOT USE.
c. Lavatory is used only by crew members.

Note: These provisions are not intended to prohibit lavatory use or inspections by crew members.

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MAINTENANCE (M)

Deactivate the associated lavatory (AMM DDG 26-24-01).

1. Confirm the lavatory waste container is empty.
2. Close, lock and placard the lavatory door.

OPERATIONS (O)

1. Lavatory door should remain locked closed, except for use or inspection by crew members.

26-24-01 **Lavatory Waste Compartment Fire Extinguishing Systems**
26-24-01B **Lavatory Deactivated**
26-24-01B-02 **787-9** **TWA to TWB**

Interval	Installed	Required	Procedure
C	9	–	(M) (O) (P)

May be inoperative for each lavatory provided:

a. Lavatory waste receptacle is empty.
b. Lavatory door is locked closed and placarded, INOPERATIVE—PLEASE DO NOT USE.
c. Lavatory is used only by crew members.

Note: These provisions are not intended to prohibit lavatory use or inspections by crew members.

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MAINTENANCE (M)

Deactivate the associated lavatory (AMM DDG 26-24-01).

1. Confirm the lavatory waste container is empty.
2. Close, lock and placard the lavatory door.

OPERATIONS (O)

1. Lavatory door should remain locked closed, except for use or inspection by crew members.

26-26-01 Portable Fire Extinguishers

26-26-01-01 Halon Fire Extinguishers

26-26-01-01-01 787-8

TQA to TQF

Interval	Installed	Required	Procedure
D	11	7	**(P)**

One or more may be inoperative or missing provided:

a. One is available in flight deck and each crew rest.
b. Inoperative fire extinguisher remains in a certified location until removed from the aircraft at the next suitable maintenance facility.
c. Location placarding is removed or obscured.
d. Required distribution is maintained.

Note: Inoperative fire extinguishers removed from a certified location or removed from the aircraft, are subject to dangerous goods regulations.

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MAINTENANCE NOTE

1. Stow the out-of-service extinguisher in a place (for instance, in a bag) where it will not be used by mistake until it can be removed from the airplane at the next available maintenance base.
2. Ensure required distribution of serviceable extinguishers is maintained throughout the airplane.

OPERATIONS NOTE

1. All flight deck and cabin crew must be informed.

26-26-01 **Portable Fire Extinguishers**
26-26-01-01 **Halon Fire Extinguishers**
26-26-01-01-02 **787-9**

TWA to TWB

Interval	Installed	Required	Procedure
D	13	7	**(P)**

One or more may be inoperative or missing provided:

a. One is available in flight deck and each crew rest.
b. Inoperative fire extinguisher remains in a certified location until removed from the aircraft at the next suitable maintenance facility.
c. Location placarding is removed or obscured.
d. Required distribution is maintained.

Note: Inoperative fire extinguishers removed from a certified location or removed from the aircraft, are subject to dangerous goods regulations

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MAINTENANCE NOTE

1. Stow the out-of-service extinguisher in a place (for instance, in a bag) where it will not be used by mistake until it can be removed from the airplane at the next available maintenance base.
2. Ensure required distribution of serviceable extinguishers is maintained throughout the airplane.

OPERATIONS NOTE

1. All flight deck and cabin crew must be informed.

Table of Contents

ATA 27 **FLIGHT CONTROLS** ATA 27-1
Table Of Contents ATA 27-1
27-00-01 Flight Controls Synoptic Display ATA 27-4
27-02-01 Bank Angle Protection ATA 27-5
27-02-02 Flight Control Modules (FCM) ATA 27-6
  27-02-02-01 Center FCM ATA 27-6
  27-02-02-02 Left FCM ATA 27-8
  27-02-02-03 Right FCM ATA 27-10
  27-02-02-04 Primary Flight Computers DISC Light ATA 27-12
27-02-03 PFCS Interface ATA 27-13
27-02-04 Actuator Delta Pressure ATA 27-14
27-02-05 Flight Control Surfaces Lockout Function ATA 27-15
  27-02-05-01 TAIL Switch LOCK Light ATA 27-16
  27-02-05-02 TAIL Switch NORM Light ATA 27-17
  27-02-05-03 WINGS Switch LOCK Light ATA 27-18
  27-02-05-04 WINGS Switch NORM Light ATA 27-19
  27-02-05-05 FAIL Light ATA 27-20
27-02-06 Direct Mode Rate Sensors ATA 27-21
27-02-07 Modal Suppression Accelerometers (MSA) ATA 27-22
  27-02-07-01 Aft MSA (787-8/-9) ATA 27-22
  27-02-07-02 Forward MSA (787-9) ATA 27-23
27-11-01 Control Wheel Position Transducers ATA 27-24
27-11-02 Alternate Control Wheel Position Transducers ATA 27-25
27-21-01 Rudder Trim Switch High Rate Function ATA 27-26
27-21-02 Rudder Pedal Position Transducers ATA 27-27
27-24-01 Empennage Door Actuation System (EDAS) (787-9) ATA 27-28
27-31-01 Control Column Position Transducers ATA 27-29
27-32-01 Stick Shaker Systems ATA 27-30

27-41-01 Control Wheel Pitch Trim Switches ATA 27-31
27-41-02 Alternate Pitch Trim Switch ATA 27-32
27-41-03 Stabilizer Control Channels ATA 27-33
27-48-01 Stabilizer Position Transducers ATA 27-34
  27-48-01-01 Transducer 1 ATA 27-34
  27-48-01-02 Transducers 2 and 3 ATA 27-35
27-48-02 Stabilizer Load Transducers ATA 27-36
27-51-01 Flap Lever Position Transducers ATA 27-37
27-51-02 Trailing Edge Variable Camber (Cruise Flaps) Function ATA 27-39
  27-51-02-01 Faired Position ATA 27-39
    27-51-02-01A Flap Secondary Mode Operates Normally ATA 27-39
    27-51-02-01B Flap Secondary Mode Inoperative ATA 27-41
  27-51-02-02 Extended or Split Position ATA 27-42
    27-51-02-02A Flap Secondary Mode Operates Normally ATA 27-42
    27-51-02-02B Flap Secondary Mode Inoperative ATA 27-44
27-51-03 Flap Secondary Mode ATA 27-45
27-51-05 Flap/Slat Hydraulic Control Module (HCM) Solenoid Coils ATA 27-46
27-51-06 Flap/Slat Hydraulic Control Module (HCM) Power Control ATA 27-47
27-51-07 Flap Variable Camber Trim Unit (VCTU) Power Control ATA 27-49
27-51-08 Alternate Flap/Slat Control ATA 27-50
  27-51-08-01 ARM Switch ALTN Light ATA 27-52
27-58-01 Flap Position/Skew Sensors ATA 27-53
27-61-01 Speedbrake Lever Position Transducers ATA 27-54
27-61-02 Spoiler Actuator Systems ATA 27-55
  27-61-02-01 Electro-Mechanical (EMA) Spoilers (4, 5, 10, 11) ATA 27-55
  27-61-02-02 Hydraulic Spoilers (1, 2, 3, 6, 7, 8, 9, 12, 13, 14) ATA 27-59
27-61-03 Automatic Speedbrake Function ATA 27-61
27-81-01 Slat Secondary Mode ATA 27-62

27-81-01A Trailing Edge Variable Camber (Cruise Flaps) Operative ATA 27-62
27-81-01B Trailing Edge Variable Camber (Cruise Flaps) Inoperative ATA 27-63
27-88-01 Slat Position Sensors ATA 27-64
27-88-01A Trailing Edge Variable Camber (Cruise Flaps) Operative ATA 27-64
27-88-01B Trailing Edge Variable Camber (Cruise Flaps) Inoperative ATA 27-65

27-00-01 Flight Controls Synoptic Display

Interval	Installed	Required	Procedure
C	1	0	**(P)**

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OPERATIONS NOTE

1. For missing data on the synoptic display, selecting an alternate location for the display (captain’s inboard, first officer’s inboard, or lower) may restore the missing data. Synoptic displays containing missing data may continue to be used to the extent remaining data is useful. Airplane system faults will be annunciated by alerting and status messages.

27-02-01 Bank Angle Protection

Interval	Installed	Required	Procedure
C	1	0	**(P)**

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27-02-02 Flight Control Modules (FCM)

27-02-02-01 Center FCM

Interval	Installed	Required	Procedure
B	1	0	**(M) (P)**

May be inoperative provided:

a. Center FCM is deactivated.
b. Left and right FCMs are power cycled and operate normally.
c. Flap/slat hydraulic control module (HCM) solenoid coils are considered inoperative.

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Note:
1. One coil of each pair of flap/slat hydraulic control module (HCM) solenoid coils will be unpowered. The airplane must also be dispatched using MEL Item 27-51-05.
2. ISFD Heading will be inoperative and the associated HDG flag will be displayed. The airplane must also be dispatched using MEL Item 34-24-01-04.
3. The PFCS INTERFACE status message will be displayed. The airplane must also be dispatched using MEL Item 27-02-03.
4. The PEDAL STEERING CHAN status message will be displayed. The airplane must also be dispatched using MEL Item 32-51-01-02.

MAINTENANCE (M)

Deactivate the Center FCM and verify Left and Right FCMs work normally (AMM DDG 27-02-02).

Note: The FCMs are interchangeable.

1. Gain access to the C1 flight control electronics cabinet. Open and collar PCM-C1 panel FCM circuit breaker.
2. Cycle power to Left FCM:
   A. Using a flight deck multi-function display only, open circuit breaker FCE CABINET-L BACKUP.
   B. Wait a minimum of 30 seconds.
   C. Close circuit breaker FCE CABINET-L BACKUP.
   D. Wait a minimum of 5 minutes for FCM to complete power-up and initialization.
3. Cycle power to Right FCM:
   A. Using a flight deck multi-function display only, open circuit breaker FCE CABINET-R BACKUP.
   B. Wait a minimum of 30 seconds.
   C. Close circuit breaker FCE CABINET-R BACKUP.
   D. Wait a minimum of 5 minutes for FCM to complete power-up and initialization.
4. Do the FCM (L) and FCM (R) system tests (AMM 27-02-18-00A). If the test fails, do corrective action and test again.

5. Confirm the following status messages are not displayed:
    - FLIGHT CONTROL SYS
    - AILERON SYS
    - ELEC SPOILER SYS
    - ELEVATOR SYS
    - FLAPERON SYS
    - HYD SPOILER SYS
    - PILOT CONTROL SYS
    - RUDDER SYS
    - STABILIZER SYS

OPERATIONS NOTE

1. Automatic dimming of the ISFD lighting will be inoperative. Manual ISFD dimming is still available.

27-02-02 **Flight Control Modules (FCM)**

27-02-02-02 **Left FCM**

Interval	Installed	Required	Procedure
B	1	0	**(M) (P)**

May be inoperative provided:

a. Left FCM is deactivated.

b. Center and right FCMs are power cycled and operate normally.

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Note:
1. The PFCS INTERFACE status message will be displayed. The airplane must also be dispatched using MEL Item 27-02-03.
2. The PEDAL STEERING CHAN status message will be displayed. The airplane must also be dispatched using MEL Item 32-51-01-02.

MAINTENANCE (M)

Deactivate the Left FCM and verify Center and Right FCMs work normally (AMM DDG 27-02-02).

Note:
1. The FCMs are interchangeable.
2. When the left FCM is deactivated, the opposite side PFD FPM fail flag is expected to appear when the PFD FPV is selected on the ground. The Captain and FO FPVs will operate normally when airborne.

1. Gain access to the L flight control electronics cabinet. Open and collar PCM-L panel FCM circuit breaker.
2. Cycle power to C1 FCM:
   - A. Using a flight deck multi-function display only, open circuit breaker FCE CABINET-C1 BACKUP.
   - B. Wait a minimum of 30 seconds.
   - C. Close circuit breaker FCE CABINET-C1 BACKUP.
   - D. Wait a minimum of 5 minutes for FCM to complete power-up and initialization.
3. Cycle power to Right FCM:
   - A. Using a flight deck multi-function display only, open circuit breaker FCE CABINET-R BACKUP.
   - B. Wait a minimum of 30 seconds.
   - C. Close circuit breaker FCE CABINET-R BACKUP.
   - D. Wait a minimum of 5 minutes for FCM to complete power-up and initialization.
4. Do the FCM (C) and FCM (R) system tests (AMM 27-02-18-00A). If the test fails, do corrective action and test again.

5. Confirm the following status messages are not displayed:
    - FLIGHT CONTROL SYS
    - AILERON SYS
    - ELEC SPOILER SYS
    - ELEVATOR SYS
    - FLAPERON SYS
    - HYD SPOILER SYS
    - PILOT CONTROL SYS
    - RUDDER SYS
    - STABILIZER SYS

27-02-02 Flight Control Modules (FCM)

27-02-02-03 Right FCM

Interval	Installed	Required	Procedure
B	1	0	**(M) (P)**

May be inoperative provided:
a. Right FCM is deactivated.
b. Left and center FCMs are power cycled and operate normally.
c. Flap/slat hydraulic control module (HCM) solenoid coils are considered inoperative.
d. Trailing edge variable camber (cruise flaps) function is considered inoperative.

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Note:
1. One coil of each pair of flap/slat hydraulic control module (HCM) solenoid coils will be unpowered. The airplane must also be dispatched using MEL Item 27-51-05.
2. Variable camber trim unit solenoid valves will be unpowered, resulting in loss of the trailing edge variable camber (cruise flaps) function. The airplane must also be dispatched using MEL Item 27-51-02.
3. For TAIL AIRFLOW SYS status message displayed, the airplane must also be dispatched using MEL item 27-24-01. **TWA to TWB**
4. The PFCS INTERFACE status message will be displayed. The airplane must also be dispatched using MEL Item 27-02-03.
5. The PEDAL STEERING CHAN status message will be displayed. The airplane must also be dispatched using MEL Item 32-51-01-02.

MAINTENANCE (M)

Deactivate the Right FCM and verify Left and Center FCMs work normally (AMM DDG 27-02-02).

Note:
1. The FCMs are interchangeable.
2. When the right FCM is deactivated, the opposite side PFD FPM fail flag is expected to appear when the PFD FPV is selected on the ground. The Captain and FO FPVs will operate normally when airborne.

1. Gain access to the R flight control electronics cabinet. Open and collar PCM-R panel FCM circuit breaker.
2. Cycle power to Left FCM:
   A. Using a flight deck multi-function display only, open circuit breaker FCE CABINET-L BACKUP.
   B. Wait a minimum of 30 seconds.
   C. Close circuit breaker FCE CABINET-L BACKUP.
   D. Wait a minimum of 5 minutes for FCM to complete power-up and initialization.
3. Cycle power to C1 FCM:
   A. Using a flight deck multi-function display only, open circuit breaker FCE CABINET-C1 BACKUP.
   B. Wait a minimum of 30 seconds.
   C. Close circuit breaker FCE CABINET-C1 BACKUP.
   D. Wait a minimum of 5 minutes for FCM to complete power-up and initialization.

4. Do the FCM (C) and FCM (L) system tests (AMM 27-02-18-00A). If the test fails, do corrective action and test again.
5. Confirm the following status messages are not displayed:
    - FLIGHT CONTROL SYS
    - AILERON SYS
    - ELEC SPOILER SYS
    - ELEVATOR SYS
    - FLAPERON SYS
    - HYD SPOILER SYS
    - PILOT CONTROL SYS
    - RUDDER SYS
    - STABILIZER SYS

OPERATIONS NOTE

1. Automatic dimming of the ISFD lighting will be inoperative. Manual ISFD dimming is still available.

27-02-02 Flight Control Modules (FCM)

27-02-02-04 Primary Flight Computers DISC Light

Interval	Installed	Required	Procedure
C	1	0	**(P)**

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27-02-03 PFCS Interface

Interval	Installed	Required	Procedure
C	1	0	**(P)**

May be dispatched with PFCS INTERFACE faults.

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UNCONTROLLED IF DOWNLOADED OR PRINTED

27-02-04 Actuator Delta Pressure

Interval	Installed	Required	Procedure
A	1	0	**(P)**

May be dispatched with ACTUATOR DELTA PRESS faults provided:

a. Repairs are made within three flight days.

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27-02-05 Flight Control Surfaces Lockout Function

Interval	Installed	Required	Procedure
C	2	0	**(P)**

May be inoperative provided:
a. FLT CONTROLS LOCKED advisory message is not displayed.

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27-02-05 Flight Control Surfaces Lockout Function

27-02-05-01 TAIL Switch LOCK Light

Interval	Installed	Required	Procedure
C	1	0	**(P)**

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27-02-05 Flight Control Surfaces Lockout Function

27-02-05-02 TAIL Switch NORM Light

Interval	Installed	Required	Procedure
C	1	0	**(P)**

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UNCONTROLLED IF DOWNLOADED OR PRINTED

27-02-05 Flight Control Surfaces Lockout Function

27-02-05-03 WINGS Switch LOCK Light

Interval	Installed	Required	Procedure
C	1	0	**(P)**

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27-02-05 Flight Control Surfaces Lockout Function

27-02-05-04 WINGS Switch NORM Light

Interval	Installed	Required	Procedure
C	1	0	**(P)**

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27-02-05 Flight Control Surfaces Lockout Function

27-02-05-05 FAIL Light

Interval	Installed	Required	Procedure
C	1	0	**(P)**

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27-02-06 Direct Mode Rate Sensors

Interval	Installed	Required	Procedure
C	4	3	**(P)**

One may be inoperative provided:

a. Control wheel position transducers operate normally.
b. Rudder pedal position transducers operate normally.
c. Control column position transducers operate normally.

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UNCONTROLLED IF DOWNLOADED OR PRINTED

27-02-07 Modal Suppression Accelerometers (MSA)

27-02-07-01 Aft MSA (787-8/-9)

Interval	Installed	Required	Procedure
C	2	0	**(P)**

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27-02-07 Modal Suppression Accelerometers (MSA)

27-02-07-02 Forward MSA (787-9)

TWA to TWB

Interval	Installed	Required	Procedure
C	2	0	**(O) (P)**

May be inoperative provided:

a. Appropriate weight limits are observed.

b. Appropriate performance adjustments are applied.

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OPERATIONS (O)

1. Maximum Takeoff Weight is 161,025 kg.

27-11-01 Control Wheel Position Transducers

Interval	Installed	Required	Procedure
C	6	5	**(P)**

One may be inoperative provided:
a. Direct mode rate sensors operate normally.

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27-11-02 Alternate Control Wheel Position Transducers

Interval	Installed	Required	Procedure
C	2	0	**(P)**

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27-21-01 Rudder Trim Switch High Rate Function

Interval	Installed	Required	Procedure
C	1	0	**(P)**

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27-21-02 Rudder Pedal Position Transducers

Interval	Installed	Required	Procedure
C	6	5	**(P)**

One may be inoperative provided:

a. Direct mode rate sensors operate normally.

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27-24-01 Empennage Door Actuation System (EDAS) (787-9)

TWA to TWB

Interval	Installed	Required	Procedure
D	1	0	**(M) (P)**

May be inoperative provided:

a. EDAS is deactivated closed.

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MAINTENANCE (M)

Deactivate the Empennage Door Actuation System (EDAS) with all doors in the closed position (AMM DDG 27-24-01).

1. Using a flight deck multi-function display only, open circuit breaker ACTUATOR-EMPENNAGE DOOR and lock with an INOP tag.
2. Set Flight Control Surfaces Panel (P5) TAIL switch to LOCK.
3. Set Control Stand Panel (P10) STAB switches to CUTOUT.
4. Verify all EDAS doors are in closed position.

   Note: The associated EDAS doors are installed only on the vertical stabilizer surface.
5. For EDAS door not in closed position:
   - A. For EDAS actuator and linkage connected to door:
     - 1) Gain access to the inoperative EDAS door actuator.
     - 2) Press and hold actuator manual release button (ensure the black indicator stripe at base of button is not visible).
     - 3) Manually rotate the EDAS door to closed position.
     - 4) Release actuator manual release button (ensure the black indicator stripe at base of button is visible).
   - B. For EDAS actuator and linkage disconnected from door:
     - 1) Gain access to the inoperative EDAS door actuator.
     - 2) Disconnect broken linkage or remove actuator as needed.
     - 3) Remove the lockout plate and retain lockout plate and screws for restoration.

       Note: Lockout plate from opposite side must be used to secure EDAS door closed.
     - 4) Gain access to the opposite side EDAS door lockout plate.
     - 5) Remove the lockout plate.
     - 6) Manually rotate the EDAS door to the closed position
     - 7) Return to the inoperative EDAS door and install the opposite side lockout plate in the unstowed position.
     - 8) Manually rotate the EDAS door to the closed position.
     - 9) Secure the EDAS door to the lockout plate.
6. Set Control Stand Panel (P10) STAB switches to NORM.
7. Set Flight Control Surfaces Panel (P5) TAIL switch to NORM.

27-31-01 Control Column Position Transducers

Interval	Installed	Required	Procedure
C	6	5	**(P)**

One may be inoperative provided:

a. Direct mode rate sensors operate normally.

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27-32-01 Stick Shaker Systems

Interval	Installed	Required	Procedure
C	2	1	**(P)**

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27-41-01 Control Wheel Pitch Trim Switches

Interval	Installed	Required	Procedure
C	2	1	**(P)**

One may be inoperative provided:

a. Alternate pitch trim switch operates normally.

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27-41-02 Alternate Pitch Trim Switch

Interval	Installed	Required	Procedure
C	1	0	**(P)**

May be inoperative provided:

a. Control wheel pitch trim switches operate normally.

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27-41-03 Stabilizer Control Channels

Interval	Installed	Required	Procedure
A	2	1	**(M) (P) (MV)**

One may be inoperative provided:

a. Inoperative channel is deactivated.

b. Repairs are made within 10 flights.

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MAINTENANCE (M)

Deactivate the inoperative stabilizer control channel (AMM DDG 27-41-03).

1. For L2 stabilizer control channel inoperative, deactivate L2 channel:
   - A. Using a flight deck multi-function display only, open circuit breaker ELECT STAB-L and lock with an INOP tag.
   - B. Gain access to the horizontal stabilizer trim actuator (HSTA).
   - C. Disconnect, cap, and stow the 235 VAC electrical connector for the L2 electronic motor control unit (EMCU).
   - D. If the L2 STAB BRK RELEASE indication on FLIGHT CONTROL maintenance page 3 is NO, removal of the associated motor / brake assembly is not required.
   - E. If the L2 STAB BRK RELEASE indication on FLIGHT CONTROL maintenance page 3 is YES, remove the associated motor / brake assembly and install dispatch tool K27048.

     Note: If the L2 STAB BRK RELEASE indication on FLIGHT CONTROL maintenance page 3 is blank, existing Flight Controls electronics faults must be resolved until either a YES or NO is displayed.
2. For R2 stabilizer control channel inoperative, deactivate R2 channel:
   - A. Using a flight deck multi-function display only, open circuit breaker ELECT STAB-R and lock with an INOP tag.
   - B. Gain access to the horizontal stabilizer trim actuator (HSTA).
   - C. Disconnect, cap, and stow the 235 VAC electrical connector for the R2 electronic motor control unit (EMCU).
   - D. If the R2 STAB BRK RELEASE indication on FLIGHT CONTROL maintenance page 3 is NO, removal of the associated motor / brake assembly is not required.
   - E. If the R2 STAB BRK RELEASE indication on FLIGHT CONTROL maintenance page 3 is YES, remove the associated motor / brake assembly and install dispatch tool K27048.

     Note: If the R2 STAB BRK RELEASE indication on FLIGHT CONTROL maintenance page 3 is blank, existing Flight Controls electronics faults must be resolved until either a YES or NO is displayed.
3. Confirm the STABILIZER SYS status message is not displayed.
4. Verify remaining stabilizer channel operates normally.
   - A. From either control wheel trim switch, trim in either direction and confirm stabilizer movement on the EICAS stabilizer position indication. Stabilizer will move at half the normal rate.

OPERATIONS NOTE

1. The STABILIZER L2 or STABILIZER R2 advisory message will be displayed.
2. Stabilizer will move at half the normal rate.

27-48-01 Stabilizer Position Transducers

27-48-01-01 Transducer 1

Interval	Installed	Required	Procedure
A	1	0	**(P)**

May be inoperative provided:

a. Transducers 2 and 3 operate normally.
b. Repairs are made within 10 flights.

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27-48-01 Stabilizer Position Transducers

27-48-01-02 Transducers 2 and 3

Interval	Installed	Required	Procedure
A	2	1	**(M) (P)**

One may be inoperative provided:

a. Associated stabilizer control channel is deactivated.
b. Transducer 1 operates normally.
c. Repairs are made within 10 flights.

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Note: The airplane must also be dispatched using MEL Item 27-41-03.

MAINTENANCE (M)

Deactivate the associated stabilizer control channel (AMM DDG 27-48-01).

1. For transducer 2 inoperative:
   A. Using a flight deck multi-function display only, open circuit breaker ELECT STAB-L and lock with an INOP tag.
   B. Gain access to the L2 Electronic Motor Control Unit (EMCU).
   C. Disconnect, cap, and stow the associated 235 VAC electrical connector.
      Note: 1. The STABILIZER L2 advisory message and STAB CHANNEL status message will be displayed.
      2. For stabilizer channel deactivation due to stabilizer position transducer fault, it is not required to remove the associated motor / brake assembly and install dispatch tool K27048.
2. For transducer 3 inoperative:
   A. Using a flight deck multi-function display only, open circuit breaker ELECT STAB-R and lock with an INOP tag.
   B. Gain access to the R2 Electronic Motor Control Unit (EMCU).
   C. Disconnect, cap, and stow the associated 235 VAC electrical connector.
      Note: 1. The STABILIZER R2 advisory message and STAB CHANNEL status message will be displayed.
      2. For stabilizer channel deactivation due to stabilizer position transducer fault, it is not required to remove the associated motor / brake assembly and install dispatch tool K27048.
3. Confirm the FLIGHT CONTROL SYS status message is not displayed.
4. Confirm the STABILIZER SYS status message is not displayed.
5. Verify remaining stabilizer channel operates normally.
   A. From either control wheel trim switch, trim in either direction and confirm stabilizer movement on the EICAS stabilizer position indication. The stabilizer will move at half the normal rate.

OPERATIONS NOTE

1. The STABILIZER L2 or STABILIZER R2 advisory message will be displayed.

27-48-02 Stabilizer Load Transducers

Interval	Installed	Required	Procedure
A	3	2	**(P)**

One may be inoperative provided:

a. Repairs are made within 10 flights.

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27-51-01 Flap Lever Position Transducers

Interval	Installed	Required	Procedure
C	4	3	**(M) (P)**

One may be inoperative provided:

a. Remaining transducers are verified to operate normally before each departure.
b. Slats and flaps alternate mode is verified to operate normally before each departure.

- -

MAINTENANCE (M)

Verify operation of slat and flaps alternate mode before each departure, and verify remaining flap lever position transducers operate normally prior to each departure (AMM DDG 27-51-01).

1. Verify remaining flap lever position transducers operate normally. **TQA to TQF**
   - A. On the FLAP/SLAT Maintenance Page, confirm no more than one flap lever transducer field is blank.
   - B. For no flap lever position transducer fields blank:
     - 1) Confirm flaps are UP.
     - 2) Pressurize the center hydraulic system.
     - 3) Move flap lever to the F1 position.
     - 4) Confirm the FLAP/SLAT CONTROL caution message is not displayed.
     - 5) Move flap lever to the UP position.
     - 6) Depressurize the hydraulic system.
2. Verify remaining flap lever position transducers operate normally. **TWA to TWB**
   - A. Confirm flaps are UP.
   - B. Pressurize the center hydraulic system.
   - C. Move flap lever to the F1 position.
   - D. Confirm the FLAP/SLAT CONTROL caution message is not displayed.
   - E. Move flap lever to the UP position.
   - F. Depressurize the hydraulic system.
3. Verify operation of slat and flaps alternate mode.
   - A. Confirm flaps are UP.
   - B. For all three hydraulic systems available:
     - 1) Turn hydraulics on.
   - C. For only one or two of the hydraulic systems available at once:
     - 1) With hydraulics off, move the speedbrake lever UP.
     - 2) Pressurize and depressurize hydraulic systems in this sequence: left, right.
     - 3) Pressurize the center hydraulic system.
     - 4) Confirm that all spoilers are extended.
   - D. Select ALTN on the ALTN FLAPS ARM switch.

     Note: The FLAP/SLAT CONTROL caution message will be displayed.

E. Move the ALTN FLAPS selector to EXT.

   Note: If hydraulic systems are pressurized, spoilers, ailerons, and flaperons will move during test.

F. After movement of both leading and trailing edges is verified on expanded flap and slat position indications, move the ALTN FLAPS selector to OFF.

G. Wait at least 30 seconds.

H. Move the ALTN FLAPS selector to RET until leading and trailing edges are fully retracted.

I. Move the ALTN FLAPS selector to OFF.

J. Disarm the ALTN FLAPS ARM switch.

K. Confirm the FLAP/SLAT CONTROL caution message is not displayed.

L. Retract spoilers if extended:
   1) With hydraulics off, move the speedbrake lever DN.
   2) Pressurize and depressurize hydraulic systems in this sequence: left, right, center.
   3) Confirm that all spoilers are retracted.

27-51-02 Trailing Edge Variable Camber (Cruise Flaps) Function

27-51-02-01 Faired Position

27-51-02-01A Flap Secondary Mode Operates Normally

Interval	Installed	Required	Procedure
C	1	0	**(M) (O) (P) (MV)**

May be inoperative provided:

a. Flap secondary mode is verified to operate normally.
b. Spoiler actuator system operates normally.
c. The weight and center-of-gravity limits are observed.
d. The performance adjustments are applied.

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MAINTENANCE (M)

Verify operation of flap secondary mode (AMM DDG 27-51-02).

1. Do the ground test of the flap secondary mode.
   A. Confirm flaps are UP.
   B. For all three hydraulic systems available:
      1) Turn hydraulics on.
   C. For only one or two of the hydraulic systems available at once:
      1) With hydraulics off, move the speedbrake lever UP.
      2) Pressurize and depressurize hydraulic systems in this sequence: left, right, center.
      3) Confirm that all spoilers are extended.
   D. Conduct the ground system test Flaps (Electric).
      Note: If hydraulic systems are pressurized, spoilers, ailerons, and flaperons will move during test.
   E. After completion of the test, confirm the FLAPS SECONDARY FAIL status message is not displayed.
   F. Retract spoilers if extended:
      1) With hydraulics off, move the speedbrake lever DN.
      2) Pressurize and depressurize hydraulic systems in this sequence: left, right, center.
      3) Confirm that all spoilers are retracted.

UNCONTROLLED IF DOWNLOADED OR PRINTED

OPERATIONS (O)

1. Observe the following changes to the maximum takeoff weight and center-of-gravity limits envelope. **TQA to TQF**
   For 787-8:

Takeoff Weight Limit	Takeoff CG Limit (%MAC)
199,581 kg	6.0
218,404 kg	21.0
219,538 kg	31.9

2. Observe the following changes to the maximum takeoff weight and center-of-gravity limits envelope. **TWA to TWB**
   For 787-9:

Takeoff Weight Limit	Takeoff CG Limit (%MAC)
237,364 kg	8.0
237,364 kg	10.7
238,498 kg	19.9
241,402 kg	27.6
241,628 kg	33.4
241,628 kg	33.8

3. Flaps inoperative in combination with flap position/skew sensors inoperative (MEL Item 27-58-01):
   A. Increase flight planning fuel by either incrementing the current the airplane drag correction factor of 1.0% or increase the flight planning fuel by 1.2%.

27-51-02 Trailing Edge Variable Camber (Cruise Flaps) Function
27-51-02-01 Faired Position
27-51-02-01B Flap Secondary Mode Inoperative

Interval	Installed	Required	Procedure
C	1	0	**(O) (P) (MV)**

May be inoperative provided:

a. Flap secondary mode is inoperative.
b. Spoiler actuator system operates normally.
c. The weight and center-of-gravity limits are observed.
d. The performance adjustments are applied.

OPERATIONS (O)

1. Use MEL 27-51-02-01A (O) procedure weight and center-of-gravity limits.
2. Use MEL item 27-51-02-01A (O) procedure for fuel burn penalties.

27-51-02 Trailing Edge Variable Camber (Cruise Flaps) Function

27-51-02-02 Extended or Split Position

27-51-02-02A Flap Secondary Mode Operates Normally

Interval	Installed	Required	Procedure
C	1	0	**(M) (O) (P) (MV)**

May be inoperative provided:

a. Flap secondary mode is verified to operate normally.
b. Spoiler actuator system operates normally.
c. The weight and center-of-gravity limits are observed.
d. The performance adjustments are applied.

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MAINTENANCE (M)

Note: The CRUISE FLAPS DISAGREE status message indicates a failure of the cruise flaps system in a minor inboard / outboard split configuration, or out of the faired position. These conditions are within the normal range of cruise flaps operation and may not be visually apparent.

Verify operation of flap secondary mode (AMM DDG 27-51-02).

1. Do the ground test of the flap secondary mode.
   - A. Confirm flaps are UP.
   - B. For all three hydraulic systems available:
     - 1) Turn hydraulics on.
   - C. For only one or two of the hydraulic systems available at once:
     - 1) With hydraulics off, move the speedbrake lever UP.
     - 2) Pressurize and depressurize hydraulic systems in this sequence: left, right, center.
     - 3) Confirm that all spoilers are extended.
   - D. Conduct the ground system test Flaps (Electric).

     Note: If hydraulic systems are pressurized, spoilers, ailerons, and flaperons will move during test.
   - E. After completion of the test, confirm the FLAPS SECONDARY FAIL status message is not displayed.
   - F. Retract spoilers if extended:
     - 1) With hydraulics off, move the speedbrake lever DN.
     - 2) Pressurize and depressurize hydraulic systems in this sequence: left, right, center.
     - 3) Confirm that all spoilers are retracted.

OPERATIONS (O)

1. Use MEL 27-51-02-01A (O) procedure weight and center-of-gravity limits.
2. Flaps inoperative only:
    A. Increase flight planning fuel by either incrementing the current airplane drag correction factor by 3.5% or increase the flight planning fuel by 4.0%.
3. Flaps inoperative in combination with flap position/skew sensors inoperative (MEL item 27-58-01):
    A. Increase flight planning fuel by either incrementing the current the airplane drag correction factor by 4.1% or increase the flight planning fuel by 4.7%.
4. Reduce performance limited weight with flap secondary mode operates normally by:

For 787-8:

TQA to TQF

Enroute Climb
9,400 lb (4,264 kg)
11,100 lb (5,035 kg) (when combined with MMEL item 27-58-01)

For 787-9:

TQA to TQF

Enroute Climb
10,700 lb (4,853 kg)
12,600 lb (5,715 kg) (when combined with MMEL item 27-58-01)

Note: The enroute climb weight penalties are based on single engine operating speeds that approximate maximum lift-to-drag ratio speed. To account for the difference in level-off altitude when operating at other speeds, multiply the enroute climb weight penalty listed above by the appropriate factor listed on page 3.00-01-00.2 in the ENROUTE DIVERSION SPEED EFFECTS paragraph.

27-51-02 Trailing Edge Variable Camber (Cruise Flaps) Function
27-51-02-02 Extended or Split Position
27-51-02-02B Flap Secondary Mode Inoperative

Interval	Installed	Required	Procedure
C	1	0	**(O) (P) (MV)**

May be inoperative provided:

a. Flap secondary mode is inoperative.
b. Spoiler actuator system operates normally.
c. The weight and center-of-gravity limits are observed.
d. The performance adjustments are applied.

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MAINTENANCE NOTE

1. The CRUISE FLAPS DISAGREE status message indicates a failure of the cruise flaps system in a minor inboard / outboard split configuration, or out of the faired position. These conditions are within the normal range of cruise flaps operation and may not be visually apparent.

OPERATIONS (O)

1. Use MEL 27-51-02-01A (O) procedure weight and center-of-gravity limits.
2. Use MEL item 27-51-02-02A (O) procedure for fuel burn penalties.

27-51-03 Flap Secondary Mode

Interval	Installed	Required	Procedure
C	1	0	**(M) (P)**

May be inoperative provided:

a. Center hydraulic system electric motor-driven pumps operate normally.
b. Slat secondary mode is verified to operate normally once each flight day.
c. Trailing edge variable camber (cruise flaps) function is considered inoperative.
d. Main landing gear priority valve is verified to operate normally once each flight day.

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Note: The airplane must also be dispatched using the appropriate sub-item of MEL 27-51-02.

MAINTENANCE (M)

Verify slat secondary mode and main landing gear priority valve operate normally once each flight day (AMM DDG 27-51-03).

1. Do the ground test of the slat secondary mode.
    A. Confirm flaps are UP.
    B. Conduct the ground system test Slats (Electric).
    C. On the expanded flap and slat position indications, confirm leading edge extension to the mid position, then retraction to UP.
    D. After completion of the test, confirm the SLATS SECONDARY FAIL status message is not displayed.
2. Verify main landing gear priority valve operates normally once each flight day.
    A. With engines not operating, pressurize the center hydraulic system.
    B. Verify that the main landing gear pressure shown on the landing gear maintenance page is more than 4500 psi.
    C. Depressurize center hydraulic system.
    D. Wait at least 10 seconds.
    E. Verify that the main landing gear pressure shown on the landing gear maintenance page is more than 2000 psi.

27-51-05 Flap/Slat Hydraulic Control Module (HCM) Solenoid Coils

Interval	Installed	Required	Procedure
C	14	7	**(M) (P)**

One coil per solenoid coil pair may be inoperative provided:
a. Slat secondary mode is verified to operate normally once each flight day.
b. Flap secondary mode is verified to operate normally once each flight day.

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MAINTENANCE (M)

Verify operation of slat secondary mode once each flight day, and verify flap secondary mode operates normally once each flight day (AMM DDG 27-51-05).

1. Do the ground test of the slat secondary mode.
    - A. Confirm flaps are UP.
    - B. Conduct the ground system test Slats (Electric).
    - C. On the expanded flap and slat position indications, confirm leading edge extension to the mid position, then retraction to UP.
    - D. After completion of the test, confirm the SLATS SECONDARY FAIL status message is not displayed.
2. For trailing edge variable camber (cruise flaps) function operating normally:
    - A. Confirm status message FLAPS SECONDARY FAIL is not displayed.
3. For trailing edge variable camber (cruise flaps) function inoperative or disabled:
    - A. Do the ground test of the flap secondary mode.
        - 1) Confirm flaps are UP.
        - 2) For all three hydraulic systems available:
            - a. Turn hydraulics on.
        - 3) For only one or two of the hydraulic systems available at once:
            - a. With hydraulics off, move the speedbrake lever UP.
            - b. Pressurize and depressurize hydraulic systems in this sequence: left, right, center.
            - c. Confirm that all spoilers are extended.
        - 4) Conduct the ground system test Flaps (Electric).

          Note: If hydraulic systems are pressurized, spoilers, ailerons, and flaperons will move during test.
        - 5) After completion of the test, confirm the FLAPS SECONDARY FAIL status message is not displayed.
        - 6) Retract spoilers if extended:
            - a. With hydraulics off, move the speedbrake lever DN.
            - b. Pressurize and depressurize hydraulic systems in this sequence: left, right, center.
            - c. Confirm that all spoilers are retracted.

27-51-06 Flap/Slat Hydraulic Control Module (HCM) Power Control

Interval	Installed	Required	Procedure
C	2	1	**(M) (P)**

One may be inoperative provided:

a. The associated hydraulic control module channel is deactivated.
b. Slat secondary mode is verified to operate normally once each flight day.
c. Flap secondary mode is verified to operate normally once each flight day.

Note: The airplane must also be dispatched using MEL Item 27-51-05.

MAINTENANCE (M)

Deactivate associated HCM channel, verify operation of slat secondary mode once each flight day, and verify flap secondary mode operates normally once each flight day (AMM DDG 27-51-06).

1. Deactivate associated HCM channel.
    - A. Confirm flaps are UP.
    - B. Remove power to C1 and R Flight Control Electronics (FCE) by opening circuit breakers FCE CABINET-C1 BACKUP and FCE CABINET-R BACKUP and locking with a DO NOT CLOSE tag.
    - C. Install landing gear downlock pins.
    - D. Gain access to flap/slat HCM in the right main landing gear wheel well.
    - E. Disconnect, cap and stow associated HCM A or B electrical connector.

      Note: The FLAP/SLAT SOLENOID COIL status message will be displayed. The airplane must also be dispatched using MEL Item 27-51-05.
    - F. Close circuit breakers FCE CABINET-C1 BACKUP and FCE CABINET-R BACKUP.
    - G. Verify remaining HCM channel operates normally.
        - 1) For all three hydraulic systems available:
            - a. Turn hydraulics on.
        - 2) For only one or two of the hydraulic systems available at once:
            - a. With hydraulics off, move the speedbrake lever UP.
            - b. Pressurize and depressurize hydraulic systems in this sequence: left, right.
            - c. Pressurize the center hydraulic system.
            - d. Confirm that all spoilers are extended.
        - 3) Using the flap lever, select flaps 5.
        - 4) On the EICAS flap display, confirm the indication reaches the 5 position and that the 5 indication turns green.
        - 5) Using the flap lever, select flaps UP.

        6) On the EICAS flap display, confirm the indication reaches the UP position and that the UP indication turns green.
        7) Confirm the status message for the remaining HCM channel is not displayed.
        8) Confirm the FLAP/SLAT SOLENOID COIL status message is displayed.
        9) Depressurize the center hydraulic system.
    H. Remove landing gear downlock pins.
2. Do the ground test of the slat secondary mode.
    A. Confirm flaps are UP.
    B. Conduct the ground system test Slats (Electric).
    C. On the expanded flap and slat position indications, confirm leading edge extension to the mid position, then retraction to UP.
    D. After completion of the test, confirm the SLATS SECONDARY FAIL status message is not displayed.
3. For trailing edge variable camber (cruise flaps) function operating normally:
    A. Confirm status message FLAPS SECONDARY FAIL is not displayed.
4. For trailing edge variable camber (cruise flaps) function inoperative or disabled:
    A. Do the ground test of the flap secondary mode.
        1) Confirm flaps are UP.
        2) For all three hydraulic systems available:
            a. Turn hydraulics on.
        3) For only one or two of the hydraulic systems available at once:
            a. With hydraulics off, move the speedbrake lever UP.
            b. Pressurize and depressurize hydraulic systems in this sequence: left, right, center.
            c. Confirm that all spoilers are extended.
        4) Conduct the ground system test Flaps (Electric).

Note: If hydraulic systems are pressurized, spoilers, ailerons, and flaperons will move during test.

        5) After completion of the test, confirm the FLAPS SECONDARY FAIL status message is not displayed.
        6) Retract spoilers if extended:
            a. With hydraulics off, move the speedbrake lever DN.
            b. Pressurize and depressurize hydraulic systems in this sequence: left, right, center.
            c. Confirm that all spoilers are retracted.

27-51-07 Flap Variable Camber Trim Unit (VCTU) Power Control

Interval	Installed	Required	Procedure
C	1	0	**(P)**

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27-51-08 Alternate Flap/Slat Control

Interval	Installed	Required	Procedure
C	1	0	**(M) (O) (P)**

May be dispatched with a FLAP ALTERNATE SWITCH fault provided:

a. Flap lever position transducers operate normally.
b. At least one surface (flap or slat) alternate control is verified to operate normally once each flight day.

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MAINTENANCE (M)

Verify operation of slat and/or flap alternate mode once each flight day (AMM DDG 27-51-08).

1. Confirm flaps are UP.
2. For all three hydraulic systems available:
   A. Turn hydraulics on.
3. For only one or two of the hydraulic systems available at once:
   A. With hydraulics off, move the speedbrake lever UP.
   B. Pressurize and depressurize hydraulic systems in this sequence: left, right.
   C. Pressurize the center hydraulic system.
   D. Confirm that all spoilers are extended.
4. Select ALTN on the ALTN FLAPS ARM switch.
   Note: The FLAP/SLAT CONTROL caution message will be displayed.
5. Move the ALTN FLAPS selector to EXT.
   Note: 1. If hydraulic systems are pressurized, spoilers, ailerons, and flaperons will move during test.
   2. Advise the flight crew if a surface (slat or flap) alternate control is inoperative.
6. After movement of the appropriate surface is verified on expanded flap or slat position indications, move the ALTN FLAPS selector to OFF.
7. Wait at least 30 seconds.
8. Move the ALTN FLAPS selector to RET until leading and trailing edges are fully retracted.
9. Move the ALTN FLAPS selector to OFF.
10. Disarm the ALTN FLAPS ARM switch.
11. Confirm the FLAP/SLAT CONTROL caution message is not displayed.
12. Retract spoilers if extended:
    A. With hydraulics off, move the speedbrake lever DN.
    B. Pressurize and depressurize hydraulic systems in this sequence: left, right, center.
    C. Confirm that all spoilers are retracted.

OPERATIONS (O)

1. In the event the FLAP/SLAT CONTROL caution message is displayed in flight, alternate mode operation will be required. Accomplish the associated non-normal checklist, but with the following approach configuration and speed:
   A. If alternate slat control is inoperative:
      1) Use flaps 20 and VREF 30 + 30 for landing.
   B. If alternate flap control is inoperative:
      1) Choose one:
         a. Flap position is 5 or less:

            Note: Ensure slats are in midrange position using alternate mode as required. Use current flaps and VREF 30 + 40 for landing.

         b. Flap position is between 5 and 20:

            Note: Use current flaps and VREF 30 + 20 for landing.

         c. Flap position is 20 or greater:

            Note: Use current flaps and VREF 20 for landing.

27-51-08 Alternate Flap/Slat Control

27-51-08-01 ARM Switch ALTN Light

Interval	Installed	Required	Procedure
C	1	0	**(P)**

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27-58-01 Flap Position/Skew Sensors

Interval	Installed	Required	Procedure
C	24	10	**(P)**

One sensor per sensor pair and all inboard flap position sensors may be inoperative provided:

a. Slat position sensors operate normally.
b. Spoiler actuator systems operate normally.

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MAINTENANCE NOTE

1. Failure of both sensors of an inboard flap position sensor pair will cause loss of the trailing edge variable camber (cruise flaps) function. The CRUISE FLAPS FAULT status message will be displayed. The airplane must also be dispatched using MEL Item 27-51-02.
2. If desired, flap position and skew sensor indications may be reviewed on the FLAP/SLAT maintenance page.

27-61-01 Speedbrake Lever Position Transducers

Interval	Installed	Required	Procedure
B	4	3	**(O) (P) (MV)**

One may be inoperative provided:

a. Automatic speedbrake function operates normally.
b. Speedbrakes are verified to operate normally before each landing.

OPERATIONS (O)

Note: An additional inflight failure may affect landing performance.

1. Prior to every landing, verify speedbrake operation.
   A. Confirm SPEEDBRAKE ARMED memo message annunciation when speedbrake lever is set to ARMED on approach.
   B. In the event SPEEDBRAKE ARMED memo message is not displayed, speedbrakes (both auto and manual) may be inoperative for landing. Landing distance will be increased:
      1) Increase normal configuration landing distance by 20%.
      2) Increase non-normal configuration landing distance by 35%.

27-61-02 Spoiler Actuator Systems

27-61-02-01 Electro-Mechanical (EMA) Spoilers (4, 5, 10, 11)

Interval	Installed	Required	Procedure
C	4	3	**(M) (O) (P) (MV)**

One may be inoperative provided:

a. Spoiler actuator is deactivated.
b. Position of deactivated spoiler is verified before each departure.
c. Trailing edge variable camber (cruise flaps) function operates normally.
d. Hydraulic spoilers operate normally.
e. Flap position/skew sensors operate normally.
f. Slat position sensors operate normally.
g. The weight and center-of-gravity limits are observed.
h. The performance adjustments are applied.

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MAINTENANCE (M)

Note:
1. SPOILERS advisory message may remain displayed until spoiler deactivation procedure is completed.
2. The FLAPS GROUND INHIBIT status message may be displayed on the ground if flaps are commanded to move. If flaps are extended, do not attempt flap retraction in any mode until spoiler deactivation procedure is completed.
3. CMCF fault reports must be used to determine the inoperative spoiler.

Deactivate the inoperative spoiler actuator. Verify the position of the deactivated spoiler before each departure (AMM DDG 27-61-02).

1. Deactivate inoperative spoiler actuator in dispatch position:
    A. Remove power from the inoperative spoiler:
        1) For spoiler 4 inoperative:
            a. Using a flight deck multi-function display only, open circuit breaker ELECT ACTR-SPLR 4 and lock with an INOP tag.
        2) For spoiler 5 inoperative:
            a. Using a flight deck multi-function display only, open circuit breaker ELECT ACTR-SPLR 5 and lock with an INOP tag.
        3) For spoiler 10 inoperative:
            a. Using a flight deck multi-function display only, open circuit breaker ELECT ACTR-SPLR 10 and lock with an INOP tag.
        4. For spoiler 11 inoperative:
            a. Using a flight deck multi-function display only, open circuit breaker ELECT ACTR-SPLR 11 and lock with an INOP tag.

B. Remove power from the remaining EMA spoilers:
   1) For spoiler 4 inoperative:
      a. Open circuit breaker ELECT ACTR-SPLR 4 and lock with a DO NOT CLOSE tag.
   2) For spoiler 5 inoperative:
      a. Open circuit breaker ELECT ACTR-SPLR 5 and lock with a DO NOT CLOSE tag.
   3) For spoiler 10 inoperative:
      a. Open circuit breaker ELECT ACTR-SPLR 10 and lock with a DO NOT CLOSE tag.
   4) For spoiler 11 inoperative:
      a. Open circuit breaker ELECT ACTR-SPLR 11 and lock with a DO NOT CLOSE tag.

C. Gain access to the inoperative spoiler EMA.

D. Disconnect, cap, and stow the center J1 connector on the linear variable differential transformer (LVDT) for the associated inoperative EMA.

E. Lock the inoperative spoiler actuator.
   1) Raise the spoiler:
      a. For spoiler actuator failure not due to shearout, remove the three retaining screws of the motor/brake cap on the EMA actuator. Using less than 30 lb-in (3 N-m) torque at a rate less than 200 rpm, use the motor shaft drive port to extend the spoiler trailing edge up.

         Note: If unable to move the actuator and spoiler panel, then a shearout has likely occurred within the actuator gear train.
      b. For spoiler actuator failure due to shearout, move the spoiler by hand.
   2) Visually inspect the trailing edge flap in the vicinity of the inoperative spoiler to ensure no damage is present.
   3) Lower the spoiler:
      a. For spoiler actuator failure not due to shearout, lower the spoiler using EMA actuator. Using less than 30 lb-in (3 N-m) torque at a rate less than 200 rpm, use the motor shaft drive port to retract spoiler until the actuator cylinder is close to the required position. Measuring tool K27051 can be used to position the spoiler actuator.
      b. For spoiler actuator failure due to shearout, move the spoiler by hand.
      c. Lock actuator by installing the motor/brake cap in the reverse position and securing with the three retaining screws. Remove the measuring tool K27051 if used.
   4) Install dispatch tool K27059 for spoiler actuator shearout, if there is a concern that the spoiler actuator may shear in a future flight, or if desired with no shearout:
      a. Place dispatch tool clamp half on actuator and rotate 180 degrees into position.
      b. Place and hold dispatch tool clamp half assembly in position.
      c. Install nut and screw combination (3 places) and torque screws to 20 to 40 lb-in.
      d. Ensure spoiler panel is locked in position.
      e. Install lock wire through clamp and screw head (3 places).

F. Close circuit breakers for the operating EMA spoilers. Confirm the circuit breaker for the inoperative spoiler remains locked with an INOP tag.

   G. Use the CMCF special function SPOILER DEACTIVATION CONFIRMATION to tell the Flight Control Electronics which spoiler you have deactivated with this procedure.
   H. Confirm SPOILERS advisory message is not displayed and SPOILER ACTUATOR status message is displayed.
   I. With hydraulics on, flaps retracted, and spoilers retracted, visually confirm the deactivated spoiler trailing edge is deflected upward approximately 1 inch relative to adjacent spoiler(s).
2. Verify the position of the deactivated spoiler before each departure.
   A. With hydraulics on, flaps retracted, and spoilers retracted, visually confirm the deactivated spoiler is deflected upward approximately 1 inch relative to adjacent spoilers.

OPERATIONS (O)

Note:
1. Speedbrakes can be used normally, but deployment with a spoiler deactivated will result in a roll and yaw asymmetry. When in the normal flight control mode, automatic rudder trim activity may be observed as the flight control system compensates for this asymmetry. Manual rudder trim inputs should not be made when in the normal mode of operation, unless directed by a non-normal checklist. A manual rudder trim input disables the automatic transfer of any steady state lateral control to the rudder and can cause increased drag and fuel consumption for the remainder of the flight.
2. The deactivated spoiler will be approximately 1 inch trailing edge up to preclude contact with trailing edge flaps. This spoiler will be shown on the Flight Control synoptic display as a blank box.

1. For an outboard spoiler (1,2,3,4,11,12,13,14) inoperative, observe the following changes to the maximum takeoff weight and center-of-gravity limits envelope. **TQA to TQF**

For 787-8:

Takeoff Weight Limit	Takeoff CG Limit (%MAC)
216,364 kg	7.14
216,364 kg	32.67

2. For an outboard spoiler (1,2,3,4,11,12,13,14) inoperative, observe the following changes to the maximum takeoff weight and center-of-gravity limits envelope. **TWA to TWB**

For 787-9:

Takeoff Weight Limit	Takeoff CG Limit (%MAC)
237,818 kg	8.0
250,156 kg	30.9

3. Dispatch with takeoff and landing performance based on one spoiler inoperative using Boeing performance software.
4. Increase flight planning fuel by either using an airplane drag correction factor of 0.8% or increase the flight planning fuel by 1.0%.
5. Reduce performance limited weight with one spoiler actuator deactivated by: **TQA to TQF**

For 787-8:

Takeoff & Landing	Enroute Climb
953 kg	998 kg

6. Reduce performance limited weight with one spoiler actuator deactivated by: **TWA to TWB**
   For 787-9:

Takeoff & Landing	Enroute Climb
1,225 kg	1,134 kg

Note: The enroute climb weight penalties are based on single engine operating speeds that approximate maximum lift-to-drag ratio speed. To account for the difference in level-off altitude when operating at other speeds, multiply the enroute climb weight penalty listed above by the appropriate factor listed on page 3.00-01-00.2 in the ENROUTE DIVERSION SPEED EFFECTS paragraph.

27-61-02 **Spoiler Actuator Systems**

27-61-02-02 **Hydraulic Spoilers (1, 2, 3, 6, 7, 8, 9, 12, 13, 14)**

Interval	Installed	Required	Procedure
C	10	9	**(M) (O) (P) (MV)**

One may be inoperative provided:

a. Spoiler actuator is deactivated.
b. Position of deactivated spoiler is verified before each departure.
c. Trailing edge variable camber (cruise flaps) function operates normally.
d. Electro-mechanical (EMA) spoilers operate normally.
e. Flap position/skew sensors operate normally.
f. Slat position sensors operate normally.
g. The weight and center-of-gravity limits are observed.
h. The performance adjustments are applied.

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Note:
1. For spoilers 6 and 9, if the spoiler fault is due to a failure of the associated Remote Electronics Unit (REU), the non-dispatchable FLAP INSPECTION status message will display after every landing.
2. The Wings Lock function of the Flight Control Surfaces Lock system will be inoperative after deactivation procedure is completed. The airplane must also be dispatched using MEL Item 27-02-05.

MAINTENANCE (M)

Note:
1. SPOILERS advisory message may remain displayed until spoiler deactivation procedure is completed.
2. The FLAPS GROUND INHIBIT status message may be displayed on the ground if flaps are commanded to move. If flaps are extended, do not attempt flap retraction in any mode until spoiler deactivation procedure is completed.
3. CMCF fault reports must be used to determine the inoperative spoiler.

Deactivate the inoperative spoiler actuator. Verify the position of the deactivated spoiler before each departure (AMM DDG 27-61-02).

1. Deactivate inoperative spoiler actuator:
   A. Confirm hydraulic systems are off.
   B. For hydraulic powered spoiler inoperative (spoilers 1, 2, 3, 6, 7, 8, 9, 12, 13, 14):

1) Deactivate spoiler actuator in dispatch position:
   a. For spoiler 3 or 12 inoperative, open circuit breaker FCE CABINET-L BACKUP and lock with a DO NOT CLOSE tag.
   b. For spoiler 1 or 14 inoperative, open circuit breaker FCE CABINET-C1 BACKUP and lock with a DO NOT CLOSE tag.
   c. For spoiler 7 or 8 inoperative, open circuit breaker FCE CABINET-C2 BACKUP and lock with a DO NOT CLOSE tag.
   d. For spoiler 2,6,9, or 13 inoperative, open circuit breaker FCE CABINET-R BACKUP and lock with a DO NOT CLOSE tag.
   e. Gain access to the inoperative spoiler actuator and use the manual release cam to extend the spoiler trailing edge up.
   f. Visually inspect the trailing edge flap in the vicinity of the inoperative spoiler to ensure no damage is present.
   g. Disconnect, cap and stow the electrical connector associated with the inoperative spoiler actuator.
   h. Install the dispatch tool K27011 on the rod end of the inoperative spoiler actuator.
      i) Install lock wire to the jam nuts (2 places).
   i. Close the opened FCE cabinet circuit breaker.
   j. Use the CMCF special function SPOILER DEACTIVATION CONFIRMATION to tell the Flight Control Electronics which spoiler you have deactivated with this procedure.
   k. Confirm SPOILERS advisory message is not displayed and SPOILER ACTUATOR status message is displayed.
   l. For spoiler 3 or 12 inoperative:
      i) Turn hydraulics on and verify spoiler panel fully retracts against collar:
         - Pressurize left system.
         - Depressurize left system.
   m. For spoiler 1,7,8, or 14 inoperative:
      i) Turn hydraulics on and verify spoiler panel fully retracts against collar:
         - Pressurize center system.
         - Depressurize center system.
   n. For spoiler 2,6,9, or 13 inoperative:
      i) Turn hydraulics on and verify spoiler panel fully retracts against collar:
         - Pressurize right system.
         - Depressurize right system.
   o. With hydraulics on, flaps retracted, and spoilers retracted, visually confirm the deactivated spoiler trailing edge is deflected upward approximately 1 inch relative to adjacent spoiler(s).

2. Verify the position of the deactivated spoiler before each departure.
   A. With hydraulics on, flaps retracted, and spoilers retracted, visually confirm the deactivated spoiler trailing edge is deflected upward approximately 1 inch relative to adjacent spoiler(s).

OPERATIONS (O)

1. Use MEL Item 27-61-02-01 Operations (O) procedure.

27-61-03 Automatic Speedbrake Function

Interval	Installed	Required	Procedure
C	1	0	**(O) (P)**

May be inoperative provided:

a. Speedbrake lever position transducers operate normally.
b. ARMED detent is not used.
c. The performance adjustments are applied.

OPERATIONS (O)

Note: AUTO SPEEDBRAKE advisory message may remain displayed.

1. Base takeoff and landing performance on manual speedbrakes.
2. Do not use the ARMED detent.
3. Extend speedbrakes manually for rejected takeoff or landing.
   A. For rejected takeoff:
      1) Simultaneously close the thrust levers, disengage the autothrottles and apply maximum manual wheel brakes or verify operation of RTO autobrakes.
      2) Manually raise SPEED BRAKE lever.
      3) Apply the maximum amount of reverse thrust consistent with conditions.
   B. For landing, use AUTO SPEEDBRAKE non-normal checklist.

27-81-01 Slat Secondary Mode

27-81-01A Trailing Edge Variable Camber (Cruise Flaps) Operative

Interval	Installed	Required	Procedure
C	1	0	**(M) (P)**

May be inoperative provided:

a. Center hydraulic system electric motor-driven pumps operate normally.
b. Trailing edge variable camber (cruise flaps) function operates normally.
c. Main landing gear priority valve is verified to operate normally once each flight day.

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MAINTENANCE (M)

Verify main landing gear priority valve operates normally once each flight day (AMM DDG 27-81-01).

1. With engines not operating, pressurize the center hydraulic system using the operational center system pump.
2. Verify that the main landing gear pressure shown on the landing gear maintenance page is more than 4500 psi.
3. Turn off the operating center system pump.
4. Wait at least 10 seconds.
5. Verify that the main landing gear pressure shown on the landing gear maintenance page is more than 2000 psi.

27-81-01 Slat Secondary Mode

27-81-01B Trailing Edge Variable Camber (Cruise Flaps) Inoperative

Interval	Installed	Required	Procedure
C	1	0	**(M) (P)**

May be inoperative provided:

a. Center hydraulic system electric motor-driven pumps operate normally.
b. Flap secondary mode is verified to operate normally once each flight day.
c. Main landing gear priority valve is verified to operate normally once each flight day.

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MAINTENANCE (M)

Verify flap secondary mode and main landing gear priority valve operate normally once each flight day (AMM DDG 27-81-01).

1. Do the ground test of the flap secondary mode.
   - A. Confirm flaps are UP.
   - B. For all three hydraulic systems available:
     - 1) Turn hydraulics on.
   - C. For only one or two of the hydraulic systems available at once:
     - 1) With hydraulics off, move the speedbrake lever UP.
     - 2) Pressurize and depressurize hydraulic systems in this sequence: left, right, center.
     - 3) Confirm that all spoilers are extended.
   - D. Conduct the ground system test Flaps (Electric).

     Note: If hydraulic systems are pressurized, spoilers, ailerons, and flaperons will move during test.
   - E. After completion of the test, confirm the FLAPS SECONDARY FAIL status message is not displayed.
   - F. Retract spoilers if extended:
     - 1) With hydraulics off, move the speedbrake lever DN.
     - 2) Pressurize and depressurize hydraulic systems in this sequence: left, right, center.
     - 3) Confirm that all spoilers are retracted.
2. Verify main landing gear priority valve operates normally once each flight day.
   - A. With engines not operating, pressurize the center hydraulic system using the operational center system pump.
   - B. Verify that the main landing gear pressure shown on the landing gear maintenance page is more than 4500 psi.
   - C. Turn off the operating center system pump.
   - D. Wait at least 10 seconds.
   - E. Verify that the main landing gear pressure shown on the landing gear maintenance page is more than 2000 psi.

27-88-01 Slat Position Sensors

27-88-01A Trailing Edge Variable Camber (Cruise Flaps) Operative

Interval	Installed	Required	Procedure
C	4	2	**(P)**

One sensor per sensor pair may be inoperative provided:

a. Flap position/skew sensors operate normally.
b. Spoiler actuator systems operate normally.
c. Trailing edge variable camber (cruise flaps) function operates normally.

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27-88-01 **Slat Position Sensors**

27-88-01B **Trailing Edge Variable Camber (Cruise Flaps) Inoperative**

Interval	Installed	Required	Procedure
C	4	2	**(M) (P)**

One sensor per sensor pair may be inoperative provided:
a. Flap position/skew sensors operate normally.
b. Spoiler actuator systems operate normally.
c. Flap secondary mode is verified to operate normally once each flight day.

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MAINTENANCE (M)

Verify flap secondary mode operates normally once each flight day (AMM DDG 27-88-01).

1. Do the ground test of the flap secondary mode.
    A. Confirm flaps are UP.
    B. For all three hydraulic systems available:
        1) Turn hydraulics on.
    C. For only one or two of the hydraulic systems available at once:
        1) With hydraulics off, move the speedbrake lever UP.
        2) Pressurize and depressurize hydraulic systems in this sequence: left, right, center.
        3) Confirm that all spoilers are extended.
    D. Conduct the ground system test Flaps (Electric).

    Note: If hydraulic systems are pressurized, spoilers, ailerons, and flaperons will move during test.

    E. After completion of the test, confirm the FLAPS SECONDARY FAIL status message is not displayed.
    F. Retract spoilers if extended:
        1) With hydraulics off, move the speedbrake lever DN.
        2) Pressurize and depressurize hydraulic systems in this sequence: left, right, center.
        3) Confirm that all spoilers are retracted.

Table of Contents

ATA 28 FUEL

ATA 28 FUEL ATA 28-1
Table Of Contents ATA 28-1
28-11-01 Sump Drain Valves ATA 28-4
28-11-01-01 Surge Tanks ATA 28-4
28-11-01-02 Main and Center Tanks ATA 28-5
28-21-01 Pressure Refueling System ATA 28-6
28-21-01-01 Main Tank Refuel Valves ATA 28-6
28-21-01-02 Center Tank Refuel Valves ATA 28-8
28-21-01-03 Refuel Valve Lights ATA 28-9
28-21-01-04 Refuel Control Panel Fuel Quantity Indicators ATA 28-10
28-21-01-05 Load Select System ATA 28-11
28-21-01-06 Overfill Light ATA 28-12
28-21-01-07 Power Switch ATA 28-13
28-21-01-08 Defuel Switch ATA 28-14
28-21-01-09 Test Features (Panel and System) ATA 28-15
28-21-01-10 Manual Fueling Valve Switches ATA 28-16
28-21-02 Refuel Adapters ATA 28-17
28-22-01 Main Tank Fuel Pumps ATA 28-18
28-22-01-01 Switch PRESS Lights ATA 28-19
28-22-01-02 Switch ON Lights ATA 28-20
28-22-02 Center Tank Fuel Override/Jettison Pump Systems ATA 28-21
28-22-02A One Pump Inoperative/Scavenge System Operating ATA 28-21
28-22-02B Both Pumps Inoperative/Scavenge System Operating ATA 28-22
28-22-02C One Pump Inoperative/Scavenge System Inoperative ATA 28-23
28-22-02D Both Pumps Inoperative/Scavenge System Inoperative ATA 28-24
28-22-02-01 Switch PRESS Lights ATA 28-25
28-22-02-02 Switch ON Lights ATA 28-26
28-22-03 Crossfeed Valve ATA 28-27

28-22-03A Both Center Tank Pumps Operate Normally . . . . ATA 28-27
28-22-03B Both Center Tank Pumps Inoperative . . . . ATA 28-28
28-22-03-01 Switch VALVE Light . . . . ATA 28-29
28-22-03-02 Switch Bar (On) Light . . . . ATA 28-30

28-22-04 Fuel Scavenge System . . . . ATA 28-31
28-22-04-01 Scavenge Pumps . . . . ATA 28-31
28-22-04-02 Scavenge Valves . . . . ATA 28-32

28-22-06 Fuel Balance Switch . . . . ATA 28-34
28-22-06-01 FAULT Light . . . . ATA 28-35
28-22-06-02 ON Light . . . . ATA 28-36

28-25-01 APU DC Fuel Pump . . . . ATA 28-37

28-25-02 APU Fuel Shutoff Valve . . . . ATA 28-38

28-26-01 Defuel/Isolation Valves . . . . ATA 28-39

28-31-01 Fuel Jettison System . . . . ATA 28-41
28-31-01-01 ARM Switch FAULT Light . . . . ATA 28-42
28-31-01-02 ARM Switch ARMED Light . . . . ATA 28-43

28-31-02 Center Tank Jettison Isolation Valves . . . . ATA 28-44
28-31-02A One Valve Inoperative . . . . ATA 28-44
28-31-02B Both Valves Inoperative . . . . ATA 28-45

28-31-03 Fuel Jettison Nozzle Valves . . . . ATA 28-46
28-31-03A One Valve Inoperative . . . . ATA 28-46
28-31-03B Both Valves Inoperative . . . . ATA 28-47
28-31-03-01 Switch VALVE Lights . . . . ATA 28-48
28-31-03-02 Switch ON Lights . . . . ATA 28-49

28-40-01 Fuel Synoptic Display . . . . ATA 28-50

28-41-01 Fuel Quantity Indication Systems . . . . ATA 28-51
28-41-01-01 Main Tanks . . . . ATA 28-51
28-41-01-02 Center Tank . . . . ATA 28-54

28-41-02 **Fuel Quantity Data Concentrator (FQDC) Channels** . . . . . **ATA 28-56**
28-41-03 **Fuel Quantity Sensor Systems** . . . . . **ATA 28-57**
28-43-01 **Fuel Temperature Indicating Systems** . . . . . **ATA 28-58**
  28-43-01-01 **Center Tank** . . . . . **ATA 28-58**
  28-43-01-02 **Main Tank** . . . . . **ATA 28-59**

28-11-01 Sump Drain Valves

28-11-01-01 Surge Tanks

Interval	Installed	Required	Procedure
C	2	0	**(M) (P)**

May be inoperative provided:

a. There is no evidence of leakage.

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MAINTENANCE (M)

Verify that there is no evidence of fuel leakage (AMM DDG 28-11-01).

1. Visually inspect exterior surface location of the inoperative sump drain valve to confirm that there is no evidence of fuel leakage.

28-11-01 **Sump Drain Valves**

28-11-01-02 **Main and Center Tanks**

Interval	Installed	Required	Procedure
C	4	3	**(M) (P)**

One may be inoperative provided:

a. There is no evidence of leakage.

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MAINTENANCE (M)

Verify that there is no evidence of fuel leakage and make sure water does not collect in associated tank (AMM DDG 28-11-01).

1. Visually inspect exterior surface location of the inoperative sump drain valve to verify that there is no evidence of fuel leakage.
2. Use procedure stated in AMM DDG 28-11-01 to prevent water accumulation in the associated tank.

28-21-01 Pressure Refueling System

28-21-01-01 Main Tank Refuel Valves

Interval	Installed	Required	Procedure
C	4	2	**(M) (O) (P)**

One valve in each main tank may be inoperative provided:

a. Inoperative valve is locked closed.

b. For inboard refuel valve inoperative, crossfeed valve is verified to operate normally before each departure.

c. For inboard refuel valve inoperative, do the FUEL BALANCE SYS Non-Normal Checklist for fuel balancing.

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MAINTENANCE (M)

Lock the inoperative main tank refuel valve closed and verify crossfeed valve operates normally (AMM DDG 28-21-01).

1. Lock the inoperative refuel valve closed.
    - A. For left main tank inboard refuel valve inoperative:
        - 1) Using a flight deck multi-function display only, open the following circuit breakers and lock with an INOP tag:
            - REFUEL VLV CLOSE-LIB
            - REFUEL VLV OPEN-LIB
    - B. For left main tank outboard refuel valve inoperative:
        - 1) Using a flight deck multi-function display only, open the following circuit breakers and lock with an INOP tag:
            - REFUEL VLV CLOSE-LOB
            - REFUEL VLV OPEN-LOB
    - C. For right main tank inboard refuel valve inoperative:
        - 1) Using a flight deck multi-function display only, open the following circuit breakers and lock with an INOP tag:
            - REFUEL VLV CLOSE-RIB
            - REFUEL VLV OPEN-RIB
    - D. For right main tank outboard refuel valve inoperative:
        - 1) Using a flight deck multi-function display only, open the following circuit breakers and lock with an INOP tag:
            - REFUEL VLV CLOSE-ROB
            - REFUEL VLV OPEN-ROB
    - E. Gain access to the inoperative refuel valve.
    - F. Disconnect, cap and stow the valve electrical connector.
    - G. Lock the valve closed.

2. For inboard refuel valve inoperative, verify crossfeed valve operates normally. (Required by AD 2019-19-10)
    A. Verify crossfeed valve operates normally.
        1) Gain access to the crossfeed valve in the main gear wheel well.
        2) Set Fuel Control Panel (P5) CROSSFEED switch to ON and visually confirm the valve drive moves from the closed (C) position to the open (O) position.
        3) Set Fuel Control Panel (P5) CROSSFEED switch to OFF and visually confirm the valve drive moves from the open (O) position to closed (C) position.

OPERATIONS (O)

Note: 1. For outboard refuel valve inoperative, fueling time will significantly increase.
2. For inboard refuel valve inoperative, the fuel balance system will be inoperative.

(Required AD 2019-19-10)

1. For inboard refuel valve inoperative, prior to each flight, verify crossfeed valve operates normally.
    A. Set Fuel Control Panel (P5) CROSSFEED switch to ON and after 15 seconds confirm FUEL CROSSFEED advisory message does not display.
    B. Set Fuel Control Panel (P5) CROSSFEED switch to OFF and after 15 seconds confirm FUEL CROSSFEED advisory message does not display.
2. For fuel balancing with inboard refuel valve inoperative, do the FUEL BALANCE SYS Non-Normal Checklist.

28-21-01 Pressure Refueling System

28-21-01-02 Center Tank Refuel Valves

Interval	Installed	Required	Procedure
C	2	0	**(M) (P)**

May be inoperative locked closed.

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MAINTENANCE (M)

Lock the inoperative center tank refuel valve closed (AMM DDG 28-21-01).

1. For center left tank refuel valve inoperative:
   A. Using a flight deck multi-function display only, open the following circuit breakers and lock with an INOP tag:
      - REFUEL VLV CLOSE-C L
      - REFUEL VLV OPEN-C L
2. For center right tank refuel valve inoperative:
   A. Using a flight deck multi-function display only, open the following circuit breakers and lock with an INOP tag:
      - REFUEL VLV CLOSE-C R
      - REFUEL VLV OPEN-C R
3. Open and deactivate the landing gear doors.
4. Gain access to the inoperative center tank refuel valve in the main gear wheel well.
5. Disconnect, cap and stow the valve electrical connector.
6. Lock the valve closed.
7. Close the landing gear doors.

28-21-01 **Pressure Refueling System**

28-21-01-03 **Refuel Valve Lights**

Interval	Installed	Required	Procedure
C	6	0	**(M) (P)**

May be inoperative provided:

a. Associated valve is verified closed after each refueling.

b. Overfill light operates normally.

* * *

MAINTENANCE (M)

Verify the associated valve is closed after each refueling (AMM DDG 28-21-01).

1. After each refueling, confirm the associated REFUEL VALVE status message is not displayed.

28-21-01 **Pressure Refueling System**

28-21-01-04 **Refuel Control Panel Fuel Quantity Indicators**

Interval	Installed	Required	Procedure
C	3	0	**(M) (P)**

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MAINTENANCE (M)

Verify the fuel quantity in the tank associated with the inoperative quantity indication using one of the following methods (AMM DDG 28-21-01).

1. Refuel using the Refuel Control Panel (RCP) (P28) appropriate Load Select Display fuel quantity indication (if operating).
2. Refuel using the flight deck EICAS or Fuel Synoptic quantity indications (if operating).
3. Determine the associated tank quantity using the FMC calculated Fuel on CDU PROGRESS page from the previous flight and the operating fuel quantity indications. Then refuel the associated tank with a known quantity of fuel.
4. Defuel the associated tank and refuel with a known quantity of fuel.

28-21-01 **Pressure Refueling System**

28-21-01-05 **Load Select System**

Interval	Installed	Required	Procedure
C	1	0	**(M) (P)**

Note: Any function which operates normally may be used.

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MAINTENANCE (M)

Note: The Load Select System includes the Load Select Displays, the Display Select switches, the Load Select Quantity switch and the All Valves switch.

Use the procedures for refueling (AMM DDG 28-21-01).

1. Utilize individual components of pressure refueling system which operate to refuel.

28-21-01 Pressure Refueling System

28-21-01-06 Overfill Light

Interval	Installed	Required	Procedure
C	1	0	**(M) (P)**

May be inoperative provided:
a. Refuel valves are verified to close when appropriate during refueling.
b. Refuel valve lights operate normally.

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MAINTENANCE (M)

Verify refuel valves close when appropriate during refueling (AMM DDG 28-21-01).

1. Monitor and ensure the refuel valves close appropriately during refueling.

28-21-01 **Pressure Refueling System**

28-21-01-07 **Power Switch**

Interval	Installed	Required	Procedure
C	1	0	**(P)**

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MAINTENANCE NOTE

1. Refueling using battery mode will not be available.

UNCONTROLLED IF DOWNLOADED OR PRINTED

28-21-01 Pressure Refueling System

28-21-01-08 Defuel Switch

Interval	Installed	Required	Procedure
C	1	0	**(P)**

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28-21-01 Pressure Refueling System

28-21-01-09 Test Features (Panel and System)

Interval	Installed	Required	Procedure
C	2	0	**(P)**

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28-21-01 Pressure Refueling System

28-21-01-10 Manual Fueling Valve Switches

Interval	Installed	Required	Procedure
C	3	0	**(P)**

May be inoperative provided:

a. Load select system operates normally.

b. Overfill light operates normally.

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28-21-02 Refuel Adapters

Interval	Installed	Required	Procedure
C	2	1	**(M) (P)**

One may be inoperative provided:

a. There are no fuel leaks.

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MAINTENANCE (M)

Immediately after refuel operations.

1. Inspect the area around the associated refuel adapter and verify fuel leaks are not present.

   Note:
   1. Dispatch is not allowed for an inoperative poppet valve. A poppet valve is not operating normally if it leaks immediately after refueling.
   2. This item is applicable to failures of the refuel/defuel handle, break-away flange, a break-away flange that is beyond wear limits, or a refuel adapter that has failed the bonding resistance check.
   3. An inoperative adapter should not be used in refuel or defuel operations.

28-22-01 Main Tank Fuel Pumps

Interval	Installed	Required	Procedure
C	4	3	**(M) (P)**

One may be inoperative provided:

a. Inoperative pump is deactivated.
b. Main tank quantity indications operate normally.

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MAINTENANCE (M)

Deactivate the inoperative fuel pump (AMM DDG 28-22-01).

1. For left main tank aft pump inoperative:
   A. Using a flight deck multi-function display only, open circuit breaker BOOST PUMP-AFT L and lock with an INOP tag.
2. For left main tank forward pump inoperative:
   A. Using a flight deck multi-function display only, open circuit breaker BOOST PUMP-FWD L and lock with an INOP tag.
3. For right main tank aft pump inoperative:
   A. Using a flight deck multi-function display only, open circuit breaker BOOST PUMP-AFT R and lock with an INOP tag.
4. For right main tank forward pump inoperative:
   A. Using a flight deck multi-function display only, open circuit breaker BOOST PUMP-FWD R and lock with an INOP tag.

OPERATIONS NOTE

1. Associated fuel pump switch is selected off.

28-22-01 Main Tank Fuel Pumps

28-22-01-01 Switch PRESS Lights

Interval	Installed	Required	Procedure
C	4	0	**(P)**

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28-22-01 **Main Tank Fuel Pumps**

28-22-01-02 **Switch ON Lights**

Interval	Installed	Required	Procedure
C	4	0	**(P)**

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28-22-02 Center Tank Fuel Override/Jettison Pump Systems

28-22-02A One Pump Inoperative/Scavenge System Operating

Interval	Installed	Required	Procedure
C	2	1	**(M) (O) (P) (MV)**

One may be inoperative provided:

a. Inoperative pump is deactivated.
b. Fuel scavenge system operates normally.
c. Crossfeed valve operates normally.
d. Center tank quantity indication operates normally.

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MAINTENANCE (M)

Note: The associated fuel pump motor controller may be removed provided the dispatch tool K24002 is installed.

Deactivate the inoperative pump (AMM DDG 28-22-02).

1. For left center tank pump inoperative:
   A. Using a flight deck multi-function display only, open circuit breaker OVRD JETT PUMP CTRL-C L and lock with an INOP tag.
2. For right center tank pump inoperative:
   A. Using a flight deck multi-function display only, open circuit breaker OVRD JETT PUMP CTRL-C R and lock with an INOP tag.

OPERATIONS (O)

1. For center tank fuel:
   A. When operative center tank pump switch is on, set crossfeed switch on.
   B. When operative center tank pump switch is off, set crossfeed switch off.

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28-22-02 Center Tank Fuel Override/Jettison Pump Systems

28-22-02B Both Pumps Inoperative/Scavenge System Operating

Interval	Installed	Required	Procedure
C	2	0	**(M) (O) (P) (MV)**

May be inoperative provided:

a. Pumps are deactivated.
b. Fuel scavenge system operates normally.
c. Center tank quantity indication operates normally.
d. For center tank fuel, fuel quantity remaining in main tanks is adequate to reach a suitable airport if scavenge system fails at any time.
e. Center tank fuel is accounted for in the airplane weight and balance in the event center tank fuel cannot be used.

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MAINTENANCE (M)

Note: The associated fuel pump motor controller may be removed provided the dispatch tool K24002 is installed.

Deactivate both inoperative pumps (AMM DDG 28-22-02).

1. Using a flight deck multi-function display only, open circuit breaker OVRD JETT PUMP CTRL-C L and lock with an INOP tag.
2. Using a flight deck multi-function display only, open circuit breaker OVRD JETT PUMP CTRL-C R and lock with an INOP tag.

OPERATIONS (O)

1. For center tank fuel:

   Note: The FUEL IN CENTER advisory message may be displayed.

   A. For center tank fuel required:
      1) Ensure fuel quantity in main tanks is adequate to reach a suitable airport if scavenge system fails at any time.
   B. Reduce the maximum zero fuel weight by the amount of the center tank fuel.
   C. Adjust the zero fuel weight center of gravity forward limit based on the amount of center tank fuel.

28-22-02 Center Tank Fuel Override/Jettison Pump Systems

28-22-02C One Pump Inoperative/Scavenge System Inoperative

Interval	Installed	Required	Procedure
C	2	1	**(M) (O) (P) (MV)**

One may be inoperative provided:

a. Inoperative pump is deactivated.
b. Crossfeed valve operates normally.
c. Center tank quantity indication operates normally.
d. For center tank fuel, fuel quantity in main tanks is adequate to reach a suitable airport if remaining center pump fails at any time.
e. Center tank fuel is accounted for in the airplane weight and balance in the event center tank fuel cannot be used.

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MAINTENANCE (M)

Note: The associated fuel pump motor controller may be removed provided the dispatch tool K24002 is installed.

Deactivate the inoperative pump (AMM DDG 28-22-02).

1. For left center tank pump inoperative:
   A. Using a flight deck multi-function display only, open circuit breaker OVRD JETT PUMP CTRL-C L and lock with an INOP tag.
2. For right center tank pump inoperative:
   A. Using a flight deck multi-function display only, open circuit breaker OVRD JETT PUMP CTRL-C R and lock with an INOP tag.

OPERATIONS (O)

1. For center tank fuel:
   A. For center tank fuel required:
      1) Ensure fuel quantity in main tanks is adequate to reach a suitable airport if remaining center pump fails at any time.
   B. Reduce the maximum zero fuel weight by the amount of the center tank fuel.
   C. Adjust the zero fuel weight center of gravity forward limit based on the amount of center tank fuel.
   D. When operative center tank pump switch is on, set crossfeed switch on.
   E. When operative center tank pump switch is off, set crossfeed switch off.

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28-22-02 Center Tank Fuel Override/Jettison Pump Systems

28-22-02D Both Pumps Inoperative/Scavenge System Inoperative

Interval	Installed	Required	Procedure
C	2	0	**(M) (O) (P) (MV)**

May be inoperative provided:

a. Pumps are deactivated.
b. Center tank quantity indication operates normally.
c. Center tank fuel is considered unusable and is accounted for in the airplane weight and balance.

Note: Fuel loading and usage limitations are for usable fuel.

MAINTENANCE (M)

Note: The associated fuel pump motor controller may be removed provided the dispatch tool K24002 is installed.

Deactivate both inoperative pump (AMM DDG 28-22-02).

1. Using a flight deck multi-function display only, open circuit breaker OVRD JETT PUMP CTRL-C L and lock with an INOP tag.
2. Using a flight deck multi-function display only, open circuit breaker OVRD JETT PUMP CTRL-C R and lock with an INOP tag.

OPERATIONS (O)

1. For center tank fuel:

   Note: 1. Center tank fuel is considered unusable.
   2. The FUEL IN CENTER advisory message may be displayed.
   3. FUEL UNUSABLE CTR will be displayed after takeoff when dispatched with trapped fuel in center tank.

   A. Reduce the maximum zero fuel weight by the amount of the center tank fuel.
   B. Adjust the zero fuel weight center of gravity forward limit based on the amount of center tank fuel.
   C. Add center tank fuel to the reserves prior to flight.

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28-22-02 Center Tank Fuel Override/Jettison Pump Systems

28-22-02-01 Switch PRESS Lights

Interval	Installed	Required	Procedure
C	2	0	**(P)**

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28-22-02 Center Tank Fuel Override/Jettison Pump Systems

28-22-02-02 Switch ON Lights

Interval	Installed	Required	Procedure
C	2	0	**(P)**

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28-22-03 Crossfeed Valve

28-22-03A Both Center Tank Pumps Operate Normally

Interval	Installed	Required	Procedure
C	1	0	**(M) (P)**

May be inoperative provided:
a. Valve is locked closed.
b. Fuel balance switch operates normally.
c. Main tank inboard refuel valves operate normally.
d. Both center tank pumps operate normally.

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MAINTENANCE (M)

Lock the crossfeed valve closed (AMM DDG 28-22-03).

1. Using a flight deck multi-function display only, open the following circuit breakers and lock with an INOP tag:
   - ENG XFEED VLV CLOSE
   - ENG XFEED VLV OPEN
2. Open and deactivate the landing gear doors.
3. Gain access to the crossfeed valve in the main gear wheel well.
4. Disconnect, cap and stow the valve electrical connector.
5. Lock the valve closed.
6. Close the landing gear doors.

OPERATIONS NOTE

1. FUEL CROSSFEED advisory message will be displayed and the fuel synoptic will incorrectly display a green flow line for the crossfeed valve deactivated in the closed position. The EICAS display will have expanded fuel indications.

28-22-03 Crossfeed Valve

28-22-03B Both Center Tank Pumps Inoperative

Interval	Installed	Required	Procedure
C	1	0	**(M) (P)**

May be inoperative provided:

a. Valve is locked closed.
b. Fuel balance switch operates normally.
c. Main tank inboard refuel valves operate normally.
d. Both center tank pumps are inoperative.

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MAINTENANCE (M)

Lock the crossfeed valve closed (AMM DDG 28-22-03).

1. Using a flight deck multi-function display only, open the following circuit breakers and lock with an INOP tag:
    - ENG XFEED VLV CLOSE
    - ENG XFEED VLV OPEN
2. Open and deactivate the landing gear doors.
3 Gain access to the crossfeed valve in the main gear wheel well.
4. Disconnect, cap and stow the valve electrical connector.
5. Lock the valve closed.
6. Close the landing gear doors.

OPERATIONS NOTE

1. FUEL CROSSFEED advisory message will be displayed and the fuel synoptic will incorrectly display a green flow line for the crossfeed valve deactivated in the closed position. The EICAS display will have expanded fuel indications.

28-22-03 Crossfeed Valve

28-22-03-01 Switch VALVE Light

Interval	Installed	Required	Procedure
C	1	0	**(P)**

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28-22-03 Crossfeed Valve

28-22-03-02 Switch Bar (On) Light

Interval	Installed	Required	Procedure
C	1	0	**(P)**

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28-22-04 Fuel Scavenge System

28-22-04-01 Scavenge Pumps

Interval	Installed	Required	Procedure
C	2	0	**(O) (P) (MV)**

May be inoperative provided:
a. Center tank quantity indication operates normally.
b. The amount of center tank fuel is considered unusable and is accounted for in the airplane weight and balance.

Note: Fuel loading and usage limitations are for usable fuel.

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OPERATIONS (O)

Note: For one scavenge pump inoperative, fuel imbalance will occur when center tank fuel is scavenged.

1. For center tank fuel required:
   - A. Increase flight planning fuel by 2177 kg.
   - B. Reduce the maximum zero fuel weight limit by 2177 kg.
   - C. Adjust the zero fuel weight center of gravity forward limit 0.5% MAC aft.
2. For center tank fuel not required:
   - A. Center tank fuel at or above 2177 kg:
     - 1) Reduce the maximum zero fuel weight limit by 2177 kg.
     - 2) Adjust the zero fuel weight center of gravity forward limit 0.5% MAC aft.
   - B. Center tank fuel less than 2177 kg:
     - 1) Reduce the maximum zero fuel weight limit by the amount of center tank fuel.
     - 2) Adjust the zero fuel weight center of gravity forward limit based on the amount of center tank fuel.

3 For dispatches with center tank fuel quantities between 2177 kg and 7257 kg (FUEL IN CENTER advisory message not display):
   - A. After cruise altitude has been established, set both center tank pump switches on.

     Note: Fuel usage from the center tank may be delayed up to 30 minutes.
   - B. When FUEL LOW CENTER advisory message is displayed, set both center tank pump switches off.

28-22-04 Fuel Scavenge System

28-22-04-02 Scavenge Valves

Interval	Installed	Required	Procedure
C	2	0	**(M) (O) (P) (MV)**

May be inoperative provided:

a. Inoperative valve is locked closed.

b. Center tank quantity indication operates normally.

c. The amount of center tank fuel is considered unusable and is accounted for in the airplane weight and balance.

Note: Fuel loading and usage limitations are for usable fuel.

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MAINTENANCE (M)

Lock the inoperative scavenge isolation valve closed (AMM DDG 28-22-04).

1. For left scavenge isolation valve inoperative:
   A. Using a flight deck multi-function display only, open the following circuit breakers and lock with an INOP tag:
      - SCAVENGE ISLN VLV CLOSE-L
      - SCAVENGE ISLN VLV OPEN-L
2. For right scavenge valve inoperative:
   A. Using a flight deck multi-function display only, open the following circuit breakers and lock with an INOP tag:
      - SCAVENGE ISLN VLV CLOSE-R
      - SCAVENGE ISLN VLV OPEN-R
3. Open and deactivate the landing gear doors.
4. Gain access to the inoperative scavenge isolation valve in the main gear wheel well.
5. Disconnect, cap and stow the valve electrical connector.
6. Lock the valve closed.
7. Close the landing gear doors.

OPERATIONS (O)

Note:
1. For one scavenge valve inoperative, fuel imbalance will occur when center tank fuel is scavenged.
2. The fuel synoptic will incorrectly display a green flow line for the deactivated scavenge valve when the center tank is or would normally be scavenged.

1. For center tank fuel required:
    - A. Increase flight planning fuel by 2177 kg.
    - B. Reduce the maximum zero fuel weight limit by 2177 kg.
    - C. Adjust the zero fuel weight center of gravity forward limit 0.5% MAC aft.
2. For center tank fuel not required:
    - A. Center tank fuel at or above 2177 kg:
        - 1) Reduce the maximum zero fuel weight limit by 2177 kg.
        - 2) Adjust the zero fuel weight center of gravity forward limit 0.5% MAC aft.
    - B. Center tank fuel less than 2177 kg:
        - 1) Reduce the maximum zero fuel weight limit by the amount of center tank fuel.
        - 2) Adjust the zero fuel weight center of gravity forward limit based on the amount of center tank fuel.
3. For dispatches with center tank fuel quantities between 2177 kg and 7257 kg (FUEL IN CENTER advisory message not display):
    - A. After cruise altitude has been established, set both center tank pump switches on.

      Note: Fuel usage from the center tank may be delayed up to 30 minutes.
    - B. When FUEL LOW CENTER advisory message is displayed, set both center tank pump switches off.

28-22-06 **Fuel Balance Switch**

Interval	Installed	Required	Procedure
C	1	0	**(M) (O) (P)**

May be inoperative provided:

a. Crossfeed valve is verified to operate normally before each departure.

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MAINTENANCE (M)

Verify crossfeed valve operates normally (AMM DDG 28-22-06).

(Required by AD 2019-19-10)

1. Gain access to the crossfeed valve in the main gear wheel well.
2. Set Fuel Control Panel (P5) CROSSFEED switch to ON and visually confirm the valve drive moves from the closed (C) position to the open (O) position.
3. Set Fuel Control Panel (P5) CROSSFEED switch to OFF and visually confirm the valve drive moves from the open (O) position to closed (C) position.

OPERATIONS (O)

(Required by AD 2019-19-10)

1. Prior to each flight, verify crossfeed valve operates normally.
    - A. Set Fuel Control Panel (P5) CROSSFEED switch to ON and after 15 seconds, confirm FUEL CROSSFEED advisory message does not display.
    - B. Set Fuel Control Panel (P5) CROSSFEED switch to OFF and after 15 seconds, confirm FUEL CROSSFEED advisory message does not display.
2. For fuel balancing, do the FUEL BALANCE SYS Non-Normal Checklist.

28-22-06 Fuel Balance Switch

28-22-06-01 FAULT Light

Interval	Installed	Required	Procedure
C	1	0	**(P)**

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28-22-06 Fuel Balance Switch

28-22-06-02 ON Light

Interval	Installed	Required	Procedure
C	1	0	**(P)**

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28-25-01 APU DC Fuel Pump

Interval	Installed	Required	Procedure
C	1	0	**(M) (P)**

May be inoperative deactivated.

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MAINTENANCE (M)

Deactivate the APU DC fuel pump (AMM DDG 28-25-01).

1. Using a flight deck multi-function display only, open circuit breaker APU DC PUMP and lock with an INOP tag.

28-25-02 APU Fuel Shutoff Valve

Interval	Installed	Required	Procedure
C	1	0	**(M) (O) (P) (MV)**

May be inoperative provided:
a. Valve is locked closed.
b. Left AGCU operates normally.
c. VFSG systems operate normally.
d. Flight remains within 180 minutes of landing at a suitable airport.

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MAINTENANCE (M)

Note: A VFSG system is considered to be operating normally if its associated status message (ELEC GEN SYS L1, L2, R1 or R2) is not displayed.

Lock the APU fuel shutoff valve closed (AMM DDG 28-25-02).

1. Using a flight deck multi-function display only, open the following circuit breakers and lock with an INOP tag:
   - APU SOV CLOSE
   - APU SOV OPEN
2. Open and deactivate the landing gear doors.
3. Gain access to the APU fuel shutoff valve actuator in the main wheel well.
4. Disconnect, cap and stow the valve electrical connector.
5. Lock the valve closed.
6. Close the landing gear doors.

OPERATIONS (O)

1. Flight must remain within 180 minutes of landing at a suitable airport.
2. Start the first engine using the Ground Power Engine Start Supplementary Procedure.

28-26-01 Defuel/Isolation Valves

Interval	Installed	Required	Procedure
C	2	0	**(M) (O) (P) (MV)**

May be inoperative provided:

a. Inoperative valve is locked closed.
b. Crossfeed valve is verified to operate normally before each departure.
c. For both valves inoperative, performance adjustments are applied.

MAINTENANCE (M)

Note: After this task is complete, the airplane can only be refueled in the manual fueling operation mode from the refuel control panel (RCP).

Lock the inoperative defuel/isolation valve closed and verify the crossfeed valve operates normally (AMM DDG 28-26-01).

1. Lock the inoperative defuel/isolation valve closed.
    - A. For left defuel/isolation valve inoperative:
        - 1) Using a flight deck multi-function display only, open the following circuit breakers and lock with an INOP tag:
            - DEFUEL VLV CLOSE-L
            - DEFUEL VLV OPEN-L
    - B. For right defuel/isolation valve inoperative:
        - 1) Using a flight deck multi-function display only, open the following circuit breakers and lock with an INOP tag:
            - DEFUEL VLV CLOSE-R
            - DEFUEL VLV OPEN-R
    - C. Open and deactivate the landing gear doors.
    - D. Gain access to the defuel/isolation valves in the main gear wheel well.
    - E. Disconnect, cap and stow the inoperative defuel/isolation valve electrical connector.
    - F. Lock the inoperative defuel/isolation valve closed.
    - G. Close the landing gear doors.
2. Verify crossfeed valve operates normally. (Required by AD 2019-19-10)
    - A. Gain access to the crossfeed valve in the main gear wheel well.
    - B. Set Fuel Control Panel (P5) CROSSFEED switch to ON and visually confirm the valve drive moves from the closed (C) position to the open (O) position.
    - C. Set Fuel Control Panel (P5) CROSSFEED switch to OFF and visually confirm the valve drive moves from the open (O) position to closed (C) position.

OPERATIONS (O)

Note: 1. For one or both defuel/isolation valves inoperative, the fuel balance system will be inoperative.
2. The associated main tank fuel jettison will be inoperative. The Fuel Synoptic will incorrectly indicate jettison flow from the associated main tank during fuel jettison.

1. For 787-8: **TQA to TQF**
   A. For both valves inoperative:
      1) Limit the takeoff weight to the maximum climb limited landing weight at the departure airport, plus center tank fuel, plus 1,089 kg.
2. For 787-9: **TWA to TWB**
   A. For both valves inoperative:
      1) Limit the takeoff weight to the maximum climb limited landing weight at the departure airport, plus center tank fuel, plus 1,179 kg.
3. Prior to each flight, verify crossfeed valve operates normally. (Required by AD 2019-19-10)
   A. Set Fuel Control Panel (P5) CROSSFEED switch to ON and after 15 seconds, confirm FUEL CROSSFEED advisory message does not display.
   B. Set Fuel Control Panel (P5) CROSSFEED switch to OFF and after 15 seconds, confirm FUEL CROSSFEED advisory message does not display.
4. For fuel balancing, do the FUEL BALANCE SYS Non-Normal Checklist. (Required by AD 2019-19-10)

28-31-01 Fuel Jettison System

Interval	Installed	Required	Procedure
C	1	0	**(M) (O) (P) (MV)**

May be inoperative provided:

a. Jettison system is deactivated.
b. Jettison nozzle valves are locked closed.
c. The performance adjustments are applied.

MAINTENANCE (M)

Deactivate the fuel jettison system and lock the nozzle valves closed (AMM DDG 28-31-01).

1. Deactivate the fuel jettison system by using a flight deck multi-function display only, opening the following circuit breakers and locking with an INOP tag:
   - JETT ISLN VLV CLOSE-L
   - JETT ISLN VLV CLOSE-R
   - JETT ISLN VLV OPEN-L
   - JETT ISLN VLV OPEN-R
   - JETT NOZZLE VLV-L
   - JETT NOZZLE VLV-L CLOSE
   - JETT NOZZLE VLV-R
   - JETT NOZZLE VLV-R CLOSE
2. Lock the jettison nozzle valves closed.
   - A. Gain access to the jettison nozzle valves.
   - B. Disconnect, cap and stow the valve electrical connectors.
   - C. Lock the valves closed.

OPERATIONS (O)

Note: The Fuel Synoptic will incorrectly indicate jettison flow from the center tank when the center tank override pumps are on with fuel in the center tank. The overhead panel L and R fuel jettison nozzle VALVE lights will be illuminated.

1. Limit the takeoff weight to the maximum climb limited landing weight at the departure airport plus 1,089 kg. **TQA to TQF**
2. Limit the takeoff weight to the maximum climb limited landing weight at the departure airport plus 1,179 kg. **TWA to TWB**

28-31-01 Fuel Jettison System

28-31-01-01 ARM Switch FAULT Light

Interval	Installed	Required	Procedure
C	1	0	**(P)**

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28-31-01 Fuel Jettison System

28-31-01-02 ARM Switch ARMED Light

Interval	Installed	Required	Procedure
C	1	0	**(P)**

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28-31-02 Center Tank Jettison Isolation Valves

28-31-02A One Valve Inoperative

Interval	Installed	Required	Procedure
C	2	1	**(M) (P)**

One may be inoperative locked closed.

MAINTENANCE (M)

Lock the inoperative jettison isolation valve closed (AMM DDG 28-31-02).

1. For the left jettison isolation valve inoperative:
   A. Using a flight deck multi-function display only, open the following circuit breakers and lock with an INOP tag:
      - JETT ISLN VLV CLOSE-L
      - JETT ISLN VLV OPEN-L
2. For the right jettison isolation valve inoperative:
   A. Using a flight deck multi-function display only, open the following circuit breakers and lock with an INOP tag:
      - JETT ISLN VLV CLOSE-R
      - JETT ISLN VLV OPEN-R
3. Open and deactivate the main landing gear doors.
4. Gain access to the inoperative jettison isolation valve in the main gear wheel well.
5. Disconnect, cap and stow the valve electrical connector.
6. Lock the valve closed.
7. Close the main landing gear doors.

28-31-02 Center Tank Jettison Isolation Valves

28-31-02B Both Valves Inoperative

Interval	Installed	Required	Procedure
C	2	0	**(M) (O) (P) (MV)**

May be inoperative provided:

a. Jettison system is deactivated.
b. Both jettison isolation valves are locked closed.
c. The performance adjustments are applied.

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Note: The airplane must be dispatched using MEL item 28-31-01.

MAINTENANCE (M)

Deactivate the jettison system and lock both jettison isolation valves closed (AMM DDG 28-31-02).

1. Deactivate the fuel jettison system by using a flight deck multi-function display only, opening the following circuit breakers and locking with INOP tags:
   - JETT ISLN VLV CLOSE-L
   - JETT ISLN VLV CLOSE-R
   - JETT ISLN VLV OPEN-L
   - JETT ISLN VLV OPEN-R
   - JETT NOZZLE VLV-L
   - JETT NOZZLE VLV-L CLOSE
   - JETT NOZZLE VLV-R
   - JETT NOZZLE VLV-R CLOSE
2. Lock the jettison nozzle valves closed.
   A. Open and deactivate the main landing gear doors.
   B. Gain access to the jettison isolation valves in the main gear wheel well.
   C. Disconnect, cap and stow the valve electrical connectors.
   D. Lock the valves closed.
   E. Close the main landing gear doors.

OPERATIONS (O)

Note: The Fuel Synoptic will incorrectly indicate jettison flow from the center tank when the center tank override pumps are on with fuel in the center tank. The overhead panel L and R fuel jettison nozzle VALVE lights will be illuminated.

1. Limit the takeoff weight to the maximum climb limited landing weight at the departure airport plus 1,089 kg. **TQA to TQF**
2. Limit the takeoff weight to the maximum climb limited landing weight at the departure airport plus 1,179 kg. **TWA to TWB**

28-31-03 Fuel Jettison Nozzle Valves

28-31-03A One Valve Inoperative

Interval	Installed	Required	Procedure
C	2	1	**(M) (P)**

One may be inoperative locked closed.

MAINTENANCE (M)

Lock the inoperative fuel jettison nozzle valve closed (AMM DDG 28-31-13).

1. For the left nozzle valve inoperative:
   - A. Using a flight deck multi-function display only, open the following circuit breakers and lock with an INOP tag:
     - JETT NOZZLE VLV-L
     - JETT NOZZLE VLV-L CLOSE
2. For the right nozzle valve inoperative:
   - A. Using a flight deck multi-function display only, open the following circuit breakers and lock with an INOP tag:
     - JETT NOZZLE VLV-R
     - JETT NOZZLE VLV-R CLOSE
3. Gain access to the inoperative jettison nozzle valve.
4. Disconnect, cap and stow the valve electrical connector.
5. Lock the valve closed.

OPERATIONS NOTE

1. The associated overhead panel L or R fuel jettison nozzle VALVE light will be illuminated.

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28-31-03 Fuel Jettison Nozzle Valves

28-31-03B Both Valves Inoperative

Interval	Installed	Required	Procedure
C	2	0	**(M) (O) (P) (MV)**

May be inoperative provided:

a. Jettison system is deactivated.
b. Both jettison nozzle valves are locked closed.
c. The performance adjustments are applied.

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Note: The airplane must be dispatched using MEL item 28-31-01.

MAINTENANCE (M)

Deactivate the jettison system and lock both fuel jettison nozzle valves closed (AMM DDG 28-31-03).

1. Deactivate the fuel jettison system by using a flight deck multi-function display only, opening the following circuit breakers and locking with an INOP tag:
   - JETT ISLN VLV CLOSE-L
   - JETT ISLN VLV CLOSE-R
   - JETT ISLN VLV OPEN-L
   - JETT ISLN VLV OPEN-R
   - JETT NOZZLE VLV-L
   - JETT NOZZLE VLV-L CLOSE
   - JETT NOZZLE VLV-R
   - JETT NOZZLE VLV-R CLOSE
2. Lock the jettison nozzle valves closed.
   A. Gain access to the jettison nozzle valves.
   B. Disconnect, cap and stow the valve electrical connectors.
   C. Lock the valves closed.

OPERATIONS (O)

Note: The Fuel Synoptic will incorrectly indicate jettison flow from the center tank when the center tank override pumps are on with fuel in the center tank. The overhead panel L and R fuel jettison nozzle VALVE lights will be illuminated.

1. Limit the takeoff weight to the maximum climb limited landing weight at the departure airport plus 1,089 kg. **TQA to TQF**
2. Limit the takeoff weight to the maximum climb limited landing weight at the departure airport plus 1,179 kg. **TWA to TWB**

28-31-03 Fuel Jettison Nozzle Valves

28-31-03-01 Switch VALVE Lights

Interval	Installed	Required	Procedure
C	2	0	**(P)**

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28-31-03 Fuel Jettison Nozzle Valves

28-31-03-02 Switch ON Lights

Interval	Installed	Required	Procedure
C	2	0	**(P)**

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28-40-01 Fuel Synoptic Display

Interval	Installed	Required	Procedure
C	1	0	**(P)**

May be inoperative provided:

a. Individual fuel quantity indications required for dispatch operate normally.

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OPERATIONS NOTE

1. For missing data on the Synoptic Display, selecting an alternate location for the display (Captain's Inboard, First Officer's Inboard, or Lower) may restore the missing data. Synoptic Displays containing missing data may continue to be used to the extent remaining data is useful. Airplane system faults will be annunciated by alerting and status messages.

28-41-01 Fuel Quantity Indication Systems

28-41-01-01 Main Tanks

Interval	Installed	Required	Procedure
B	2	1	**(M) (O) (P) (MV)**

One may be inoperative provided:

a. Fuel quantity in associated tank is verified by AMM DDG 28-41-01.
b. Crossfeed valve is verified to operate normally before each departure.
c. Both fuel pumps for the associated main tank operate normally.
d. Center tank fuel quantity indication operates normally.
e. Fuel flow indications operate normally.
f. FMC FUEL is initialized with the known total fuel quantity.
g. Do the FUEL BALANCE SYS Non-Normal Checklist for fuel balancing.
h. The amount of center tank fuel is considered unusable and is accounted for in the airplane weight and balance.
i. The performance adjustments are applied.
j. Flight remains within 180 minutes of landing at a suitable airport.

Note: Fuel loading and usage limitations are for usable fuel.

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MAINTENANCE (M)

Verify the fuel quantity for the associated main tank and the crossfeed valve operates normally (AMM DDG 28-41-01).

1. Verify the fuel quantity for the associated main tank using one of the following methods:
   A. Use the Refuel Control Panel (RCP) (P28) fuel quantity indication (if operating).
   B. Determine the associated tank quantity using the FMC Calculated Fuel from the previous flight and the operating fuel quantity indications. For refueling, transfer fuel from a fuel tank with an operating fuel quantity indication.
   C. Defuel the associated tank. For refueling, transfer fuel from a fuel tank with an operating fuel quantity indication.
2. Verify crossfeed valve operates normally. (Required by AD 2019-19-10)
   A. Gain access to the crossfeed valve in the main gear wheel well.
   B. Set Fuel Control Panel (P5) CROSSFEED switch to ON and visually confirm the valve drive moves from the closed (C) position to the open (O) position.
   C. Set Fuel Control Panel (P5) CROSSFEED switch to OFF and visually confirm the valve drive moves from the open (O) position to closed (C) position.

OPERATIONS (O)

Note: 1. The fuel scavenge associated with the inoperative FQIS, the main tank jettison and the fuel balance systems will be inoperative.
2. The FUEL DISAGREE and FUEL IMBALANCE advisory messages will be inoperative. The FUEL QTY LOW advisory message for the associated tank will be inoperative.

1. For 787-8: **TQA to TQF**
   A. Limit the takeoff weight to the maximum climb limited landing weight at the departure airport, plus center tank fuel, plus 1,089 kg.
2. For 787-9: **TWA to TWB**
   A. Limit the takeoff weight to the maximum climb limited landing weight at the departure airport, plus center tank fuel, plus 1,179 kg.
3. For center tank fuel required:
   A. Increase flight planning fuel by 2177 kg.
   B. Reduce the maximum zero fuel weight limit by 2177 kg.
   C. Adjust the zero fuel weight center of gravity forward limit 0.5% MAC aft.
4. For center tank fuel not required:
   A. Center tank fuel at or above 2177 kg:
      1) Reduce the maximum zero fuel weight limit by 2177 kg.
      2) Adjust the zero fuel weight center of gravity forward limit 0.5% MAC aft.
   B. Center tank fuel less than 2177 kg:
      1) Reduce the maximum zero fuel weight limit by the amount of center tank fuel.
      2) Adjust the zero fuel weight center of gravity forward limit based on the amount of center tank fuel.
5. The flight must remain with 180 minutes of landing at a suitable airport.
6. Prior to each flight, verify crossfeed valve operates normally. (Required by AD 2019-19-10)
   A. Set Fuel Control Panel (P5) CROSSFEED switch to ON and after 15 seconds, confirm FUEL CROSSFEED advisory message does not display.
   B. Set Fuel Control Panel (P5) CROSSFEED switch to OFF and after 15 seconds, confirm FUEL CROSSFEED advisory message does not display.
7. Total fuel quantity must be calculated and manually initialized on the FMC PERF INIT page.

   Note: 1. The total fuel quantity indications will be inoperative.
   2. The FMC CALCULATED fuel quantity will be blank prior to manual initialization.
   3. The manually entered total fuel quantity and the takeoff speeds will blank after engine start.

   A. Manually enter the total fuel quantity on the PERF INIT page (before and after engine start). MANUAL will be displayed next to the entered fuel quantity.
   B. Confirm the fuel quantity entered is displayed under the CALCULATED fuel quantity display on the PROGRESS page (before and after engine start).

8. Flight crew should monitor FMC Calculated fuel and the operative fuel tank quantity indications to ensure usages are normal and to derive the amount of fuel in the tank with the inoperative quantity indication when necessary.
9. For fuel balancing:
   A. Do the FUEL BALANCE SYS Non-Normal Checklist. (Required by AD 2019-19-10)

      Note: For center tank fuel, the operative scavenge system will cause a fuel imbalance of up to 2177 kg.
10. For fuel jettison:

    Note:
    1. Selection of fuel jettison causes all FMC performance and VNAV data to become invalid. If VNAV is the current active pitch mode of the Autopilot Flight Director System (AFDS), the AFDS pitch mode will fail with a resulting master caution light illumination, AUTOPILOT caution message and amber bar through the pitch annunciation on the Primary Flight Display (PFD).
    2. The FUEL JETTISON MAIN advisory message will be displayed.

    A. Fuel jettison system maximum landing weight and fuel to remain automatic shutoff functions will be inoperative.
    B. FUEL AUTO JETTISON caution message will be displayed. Do the FUEL AUTO JETTISON Non-Normal Checklist.

28-41-01 Fuel Quantity Indication Systems

28-41-01-02 Center Tank

Interval	Installed	Required	Procedure
B	1	0	**(M) (O) (P) (MV)**

May be inoperative provided:
a. Fuel quantity in center tank is verified by AMM DDG 28-41-01.
b. Both main tank fuel quantity indication systems operate normally.
c. Both center tank fuel pumps operate normally.
d. Fuel flow indications operate normally.
e. Fuel scavenge system operates normally.
f. FMC FUEL is initialized with the known total fuel quantity.
g. Flight remains within 180 minutes of landing at a suitable airport.

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MAINTENANCE (M)

Verify the fuel quantity for the center tank using one of the following methods (AMM DDG 28-41-01).

1. Use the Refuel Control Panel (RCP) (P28) fuel quantity indication (if operating).
2. Determine the center tank quantity using the FMC Calculated Fuel from the previous flight and the main tank fuel quantity indications. For refueling, transfer fuel from a main tank.
3. Defuel the center tank. For refueling, transfer fuel from a main tank.

OPERATIONS (O)

Note: The FUEL DISAGREE, FUEL IN CENTER and FUEL LOW CENTER advisory messages will be inoperative.

1. The flight must remain with 180 minutes of landing at a suitable airport.
2. Total fuel quantity must be calculated and manually initialized on the FMC PERF INIT page.

   Note: 1. The total fuel quantity indications will be inoperative.
   2. The FMC CALCULATED fuel quantity will be blank prior to manual initialization.
   3. The manually entered total fuel quantity and the takeoff speeds will blank after engine start.

   A. Manually enter the total fuel quantity on the PERF INIT page (before and after engine start). MANUAL will be displayed next to the entered fuel quantity.
   B. Verify the fuel quantity entered is displayed under the CALCULATED fuel quantity display on the PROGRESS page (before and after engine start).
3. Flight crew should monitor FMC calculated fuel and the main tank quantity indications to ensure usages are normal and to derive the amount of fuel in the tank with the inoperative quantity indication when necessary.

4. For center tank fuel:
    A. For takeoff and center tank fuel greater than 7257 kg:
        1) Set both center tank fuel pumps on. Use the FUEL PUMP CENTER L and R advisory message Non-Normal Checklists for setting the center tank pumps off.
    B. For takeoff and center tank fuel at or below than 7257 kg:
        1) Set both center tank fuel pumps off.
    C. For inflight above 10,000 feet and center tank fuel greater than 2177 kg:
        1) Set both center tank fuel pumps on. Use the FUEL PUMP CENTER L and R advisory message Non-Normal Checklists for setting the center tank pumps off.
5. For fuel jettison:

    Note: Selection of fuel jettison causes all FMC performance and VNAV data to become invalid. If VNAV is the current active pitch mode of the Autopilot Flight Director System (AFDS), the AFDS pitch mode will fail with a resulting master caution light illumination, AUTOPILOT caution message and amber bar through the pitch annunciation on the Primary Flight Display (PFD).

    A. Fuel jettison system maximum landing weight and fuel to remain automatic shutoff functions will be inoperative.
    B. FUEL AUTO JETTISON caution message will be displayed. Do the FUEL AUTO JETTISON Non-Normal Checklist.

28-41-02 Fuel Quantity Data Concentrator (FQDC) Channels

Interval	Installed	Required	Procedure
C	6	3	**(M) (P)**

One channel for each tank may be inoperative deactivated.

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MAINTENANCE (M)

Deactivate the inoperative FQDC channel (AMM DDG 28-41-02).

1. For the center FQDC:
   A. For channel A inoperative:
      1) Using a flight deck multi-function display only, open circuit breaker FUEL QTY DATA CONCENTOR-C CHAN A and lock with an INOP tag.

         Note: Opening and locking of circuit breaker FUEL QTY DATA CONCENTOR-C CHAN A results in the display of FUEL TEMP INDICATION C status message. The airplane must also be dispatched using MEL Item 28-43-01-01.
   B. For channel B inoperative:
      1) Using a flight deck multi-function display only, open circuit breaker FUEL QTY DATA CONCENTOR-C CHAN B and lock with an INOP tag.
2. For the left FQDC:
   A. For channel A inoperative:
      1) Using a flight deck muti-function display only, open circuit breaker FUEL QTY DATA CONCENTOR-L CHAN A and lock with an INOP tag.

         Note: Opening and locking of circuit breaker FUEL QTY DATA CONCENTOR-L CHAN A results in the display of FUEL TEMP INDICATION L status message. The airplane must also be dispatched using MEL Item 28-43-01-02.
   B. For channel B inoperative:
      1) Using a flight deck multi-function display only, open circuit breaker FUEL QTY DATA CONCENTOR-L CHAN B and lock with an INOP tag.
3. For the right FQDC:
   A. For channel A inoperative:
      1) Using a flight deck multi-function display only, open circuit breaker FUEL QTY DATA CONCENTOR-R CHAN A and lock with an INOP tag.

         Note: Opening and locking of circuit breaker FUEL QTY DATA CONCENTOR-R CHAN A results in the display of FUEL TEMP INDICATION R status message. The airplane must also be dispatched using MEL Item 28-43-01-02.
   B. For channel B inoperative:
      1) Using a flight deck multi-function display only, open circuit breaker FUEL QTY DATA CONCENTOR-R CHAN B and lock with an INOP tag.

28-41-03 Fuel Quantity Sensor Systems

Interval	Installed	Required	Procedure
C	3	0	**(P)**

May be dispatched with FUEL QTY SENSORS faults.

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28-43-01 Fuel Temperature Indicating Systems

28-43-01-01 Center Tank

Interval	Installed	Required	Procedure
C	1	0	**(P)**

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28-43-01 Fuel Temperature Indicating Systems

28-43-01-02 Main Tank

Interval	Installed	Required	Procedure
C	2	1	**(P)**

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Table of Contents

ATA 29 HYDRAULIC POWER ATA 29-1

Table Of Contents . . . . ATA 29-1

29-11-01 Engine Driven Pumps (EDP) Depressurization Function . . . . ATA 29-3

29-11-02 Center System Electric Motor-Driven Pumps (EMP) . . . . ATA 29-4

29-11-03 Electric Motor-Driven Pump (EMP) Selectors . . . . ATA 29-6

29-11-03-01 Center System AUTO Position . . . . ATA 29-6

29-11-03-01A One AUTO Position Inoperative . . . . ATA 29-6

29-11-03-01B Both AUTO Positions Inoperative . . . . ATA 29-7

29-11-03-02 Left System AUTO Position . . . . ATA 29-8

29-11-03-03 Right System AUTO Position . . . . ATA 29-9

29-11-03-04 ON Position . . . . ATA 29-10

29-11-04 Reserve Steering Isolation System . . . . ATA 29-11

29-11-05 Nose Gear Isolation System . . . . ATA 29-12

29-11-06 Alternate Gear Extension Isolation System . . . . ATA 29-13

29-11-07 Hydraulic Pump Case Drain Filter Monitoring Systems . . . . ATA 29-14

29-11-08 Nose Landing Gear Accumulator . . . . ATA 29-15

29-11-08-01 Charging Valve . . . . ATA 29-16

29-11-08-02 Charging Gauge . . . . ATA 29-17

29-11-09 Heat Exchanger Bypass Valve (HXBV) . . . . ATA 29-18

29-18-01 Hydraulic Reservoir Accumulators . . . . ATA 29-19

29-18-01-01 Charging Valves . . . . ATA 29-20

29-18-01-02 Charging Gauges . . . . ATA 29-21

29-18-02 Hydraulic Reservoir Pressure Indication Systems . . . . ATA 29-22

29-18-03 Reservoir Quantity Gauge (Remote) . . . . ATA 29-23

29-18-04 Hydraulic Reservoir Temperature Indication Systems . . . . ATA 29-24

29-21-02 Ram Air Turbine (RAT) Position Indication System . . . . ATA 29-25

29-21-02-01 Switch UNLKD Light . . . . ATA 29-26

29-21-02-02 Switch PRESS Light . . . . ATA 29-27

29-21-03 Ram Air Turbine (RAT) Heaters . . . . . ATA 29-28
29-30-01 Hydraulic Pump Lights . . . . . ATA 29-29
  29-30-01-01 FAULT Lights . . . . . ATA 29-29
  29-30-01-02 ON Lights . . . . . ATA 29-30
29-30-02 Hydraulic Synoptic Display . . . . . ATA 29-31
29-31-01 Hydraulic System Pressure Transducers . . . . . ATA 29-32
  29-31-01-01 Left and Right System Pressure Transducers . . . . . ATA 29-32
  29-31-01-02 Center System Pressure Transducer . . . . . ATA 29-33
29-31-02 Hydraulic Pump Pressure Indication Systems . . . . . ATA 29-34
29-31-03 Hydraulic Reservoir Auto-Bleed Valves System . . . . . ATA 29-36
  29-31-03A Manual Bleeding Not Required . . . . . ATA 29-36
  29-31-03B Manual Bleeding Required . . . . . ATA 29-37
29-32-01 Hydraulic Pump Temperature Indications . . . . . ATA 29-38
29-33-01 Hydraulic Fluid Quantity Indications (Flight Deck) . . . . . ATA 29-39
  29-33-01-01 Left and Right System Quantity Indications . . . . . ATA 29-39
  29-33-01-02 Center System Quantity Indication . . . . . ATA 29-40

29-11-01 Engine Driven Pumps (EDP) Depressurization Function

Interval	Installed	Required	Procedure
C	2	1	**(M) (P)**

One may be inoperative deactivated.

MAINTENANCE (M)

Deactivate inoperative engine driven pump depressurization function (AMM DDG 29-11-01).

1. For left EDP depressurization function inoperative, using a flight deck multi-function display only, open the EDP DEPRESS-L circuit breaker and lock with an INOP tag.
2. For right EDP depressurization function inoperative, using a flight deck multi-function display only, open the EDP DEPRESS-R circuit breaker and lock with an INOP tag.

29-11-02 Center System Electric Motor-Driven Pumps (EMP)

Interval	Installed	Required	Procedure
C	2	1	**(M) (O) (P) (MV)**

One may be inoperative provided:

a. Inoperative EMP is deactivated.
b. Slat secondary mode is verified to operate normally once each flight day.
c. Flap secondary mode is verified to operate normally once each flight day.
d. Main landing gear priority valve is verified to operate normally once each flight day.
e. The performance adjustments are applied.

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Note: A deactivated center system hydraulic pump will cause the associated center system common motor start controller to be inoperative. The airplane must also be dispatched using MEL Item 24-15-01-02.

MAINTENANCE (M)

Deactivate the inoperative center hydraulic system electric motor-driven pump. Verify that slat secondary mode, flap secondary mode and main landing gear priority valve operate normally once each flight day (AMM DDG 29-11-02).

1. Set affected center hydraulic system pump switch OFF.
2. Deactivate the inoperative center hydraulic system electric motor-driven pump:
   A. For HYD EMP C1 inoperative:
      1) Using a flight deck multi-function display only, open the following circuit breakers and lock with an INOP tag:
         - HYD EMP-C1 CHAN 1
         - HYD EMP-C1 CHAN 2
      2) Open and collar P49 panel HYD EMP-C1 BAT circuit breaker.
   B. For HYD EMP C2 inoperative:
      1) Using a flight deck multi-function display only, open the following circuit breakers and lock with an INOP tag:
         - HYD EMP-C2 CHAN 1
         - HYD EMP-C2 CHAN 2
      2) Open and collar P49 panel HYD EMP-C2 BAT circuit breaker.
3. Verify slat secondary mode operates normally once each flight day using the MEL Maintenance procedure in item 27-51-03.
4. Verify flap secondary mode operates normally once each flight day, by confirming that the following EICAS messages are not displayed: CRUISE FLAPS SYS Advisory, CRUISE FLAPS FAULT Status, CRUISE FLAPS DISAGREE Status, CRUISE FLAPS DISABLED Status and FLAPS SECONDARY FAIL Status.
   A. If the trailing edge variable camber (cruise flaps) function is operating normally, then no further test of the flap secondary mode is required.
   B. If the trailing edge variable camber (cruise flaps) function is inoperative, verify flap secondary mode operates normally once each flight day using the MEL Maintenance procedure in item 27-51-02-01A (step 1).

5. Verify main landing gear priority valve operates normally once each flight day.
   A. With engines not operating, pressurize the center hydraulic system using the operational center system pump.
   B. Verify that the main landing gear pressure shown on the landing gear maintenance page is more than 4500 psi.
   C. Turn off the operating center system pump.
   D. Wait at least 10 seconds.
   E. Verify that the main landing gear pressure shown on the landing gear maintenance page is more than 2000 psi.

OPERATIONS (O)

1. Determine flight planning information by selecting Gear Down Dispatch in the Boeing performance software.

   Note: With a center hydraulic system electric motor-driven pump inoperative, slower retraction time for the landing gear may result in the GEAR DISAGREE caution message and GEAR DOOR advisory message being momentarily displayed until landing gear is fully retracted.

29-11-03 Electric Motor-Driven Pump (EMP) Selectors

29-11-03-01 Center System AUTO Position

29-11-03-01A One AUTO Position Inoperative

Interval	Installed	Required	Procedure
C	2	1	**(O) (P)**

One may be inoperative provided:

a. Associated pump selector ON and OFF positions operate normally.
b. Opposite center system EMP operates normally.
c. Associated pump selector is ON for all operations.

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OPERATIONS (O)

1. Set the associated C1 or C2 ELEC pump selector ON.

29-11-03 Electric Motor-Driven Pump (EMP) Selectors
29-11-03-01 Center System AUTO Position

29-11-03-01B Both AUTO Positions Inoperative

Interval	Installed	Required	Procedure
C	2	0	**(O) (P)**

May be inoperative provided:

a. Both center system pump selector ON and OFF positions operate normally.
b. Left and right system EMP selector AUTO positions operate normally.
c. Both center system pump selectors are ON for takeoff and landing.

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OPERATIONS (O)

1. Set both the C1 ELEC and C2 ELEC pump selectors ON for takeoff and landing. Set one center system pump selector OFF at all other times.

29-11-03 Electric Motor-Driven Pump (EMP) Selectors

29-11-03-02 Left System AUTO Position

Interval	Installed	Required	Procedure
A	1	0	**(O) (P)**

May be inoperative provided:

a. Left pump selector ON and OFF positions operate normally.
b. Center system EMP selector AUTO positions operate normally.
c. Nitrogen generation system is considered inoperative.
d. Left pump selector is ON for takeoff and landing.
e. Repairs are made within 10 flight days.

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Note: The airplane must also be dispatched using MEL Item 47-11-01-01.

OPERATIONS (O)

1. Set the L ELEC pump selector ON for takeoff and landing and OFF at all other times.

Note: The HYD PRESS DEM L advisory message will be displayed when the L ELEC pump selector is OFF.

29-11-03 Electric Motor-Driven Pump (EMP) Selectors

29-11-03-03 Right System AUTO Position

Interval	Installed	Required	Procedure
C	1	0	**(O) (P)**

May be inoperative provided:

a. Right pump selector ON and OFF positions operate normally.
b. Center system EMP selector AUTO positions operate normally.
c. Right pump selector is ON for takeoff and landing.

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OPERATIONS (O)

1. Set the R ELEC pump selector ON for takeoff and landing and OFF at all other times.

Note: The HYD PRESS DEM R advisory message will be displayed when the R ELEC pump selector is OFF.

29-11-03 Electric Motor-Driven Pump (EMP) Selectors

29-11-03-04 ON Position

Interval	Installed	Required	Procedure
C	4	0	**(P)**

May be inoperative provided:

a. The AUTO and OFF positions for associated pump operate normally.

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29-11-04 Reserve Steering Isolation System

Interval	Installed	Required	Procedure
C	1	0	**(M) (P)**

May be inoperative provided:

a. Reserve steering isolation valve is deactivated open.

MAINTENANCE (M)

Deactivate reserve steering isolation valve in the open position (AMM DDG 29-11-04).

1. Open and deactivate the landing gear doors.
2. Using a flight deck multi-function display only, open the following circuit breakers and lock with an INOP tag:
   - HYD ISLN VLV-RSRVD STEERING CLOSE 1
   - HYD ISLN VLV-RSRVD STEERING CLOSE 2
3. Gain access to the reserve steering isolation valve in the left wheel well.
4. Deactivate the reserve steering isolation valve in the open position.
   - A. Disconnect, cap and stow the reserve steering isolation valve electrical connector.
   - B. Remove the quick release pin from the stow position.
   - C. Set the manual override handle to the OPEN position.
   - D. Insert the quick release pin in the OPEN position.
5. Close the landing gear doors.

29-11-05 Nose Gear Isolation System

Interval	Installed	Required	Procedure
C	1	0	**(M) (P)**

May be inoperative provided:

a. Nose gear isolation valve is deactivated open.

b. Center hydraulic system pressure transducer operates normally.

MAINTENANCE (M)

Deactivate nose gear isolation valve in the open position (AMM DDG 29-11-05).

1. Open and deactivate the landing gear doors.
2. Using a flight deck multi-function display only, open the following circuit breakers and lock with an INOP tag:
   - HYD ISLN VLV-NLG OPEN 1
   - HYD ISLN VLV-NLG OPEN 2
3. Gain access to the nose gear isolation valve in the left wheel well.
4. Deactivate the nose gear isolation valve in the open position.
   A. Disconnect, cap and stow the nose gear isolation valve electrical connector.
   B. Remove the quick release pin from the stow position.
   C. Set the manual override button to the OPEN position.
   D. Insert the quick release pin in the OPEN position.
5. Close the landing gear doors.

29-11-06 Alternate Gear Extension Isolation System

Interval	Installed	Required	Procedure
C	1	0	**(M) (O) (P) (MV)**

May be inoperative provided:

a. Landing gear is secured in the down position.
b. Airplane is dispatched in accordance with Gear Down Dispatch data in Performance Dispatch (PD) chapter.

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MAINTENANCE (M)

Secure the landing gear in the down position (AMM DDG 29-11-06).

1. Install landing gear downlock pins (dispatch tool J32011) for airplane flight with landing gear locked in the extended position.
2. Using a flight deck multi-function display only, open the following circuit breakers and lock with an INOP tag:
   - MLG DOOR CTRL VLV OPEN-1
   - MLG DOOR CTRL VLV OPEN-2
   - LG LEVER LOCK
3. On the MISC SYSTEM CTRLS (MSC) maintenance page, set the Overspeed Warning switch to GEAR DOWN.

OPERATIONS (O)

1. Airplane is dispatched in accordance with Gear Down Dispatch data in Performance Dispatch (PD) chapter.
2. Determine flight planning fuel adjustments by selecting Gear Down Dispatch in the Onboard Performance Tool (OPT).

   Note: The FMC does not support certain provisions for operations with the landing gear extended.
3. VMO GEAR DOWN memo message will be displayed.

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29-11-07 Hydraulic Pump Case Drain Filter Monitoring Systems

Interval	Installed	Required	Procedure
C	6	0	**(P)**

May be dispatched with HYD FILTER CASE faults provided:

a. Associated hydraulic pump temperature indication operates normally.

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29-11-08 Nose Landing Gear Accumulator

Interval	Installed	Required	Procedure
C	1	0	**(P)**

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29-11-08 Nose Landing Gear Accumulator

29-11-08-01 Charging Valve

Interval	Installed	Required	Procedure
C	1	0	**(P)**

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29-11-08 **Nose Landing Gear Accumulator**

29-11-08-02 **Charging Gauge**

Interval	Installed	Required	Procedure
C	1	0	**(P)**

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29-11-09 Heat Exchanger Bypass Valve (HXBV)

Interval	Installed	Required	Procedure
B	3	2	(O) (P)

One may be inoperative provided fuel temperature is above the appropriate limit before takeoff.

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OPERATIONS (O)

1. Ensure fuel temperature is above -7 degrees C before takeoff.

29-18-01 Hydraulic Reservoir Accumulators

Interval	Installed	Required	Procedure
C	3	0	**(P)**

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29-18-01 **Hydraulic Reservoir Accumulator**

29-18-01-01 **Charging Valves**

Interval	Installed	Required	Procedure
C	3	0	**(P)**

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29-18-01 Hydraulic Reservoir Accumulator

29-18-01-02 Charging Gauges

Interval	Installed	Required	Procedure
C	3	0	**(P)**

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29-18-02 Hydraulic Reservoir Pressure Indication Systems

Interval	Installed	Required	Procedure
C	3	0	**(P)**

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29-18-03 Reservoir Quantity Gauge (Remote)

Interval	Installed	Required	Procedure
C	1	0	**(P)**

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29-18-04 Hydraulic Reservoir Temperature Indication Systems

Interval	Installed	Required	Procedure
C	3	0	**(P)**

May be inoperative provided:

a. Associated pump temperature indications operate normally.

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29-21-02 Ram Air Turbine (RAT) Position Indication System

Interval	Installed	Required	Procedure
C	1	0	**(M) (P)**

May be inoperative provided:

a. RAT is verified to deploy normally.

b. RAT is verified to be stowed before to each flight.

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MAINTENANCE (M)

Note:

1. Dispatch is not allowed if status message RAT DEPLOY INOP is displayed prior to the next departure.
2. RAT DEPLOY INOP will be set during the first dispatch with a faulty RAT deploy position switch. If RAT deploy position switch is confirmed to be faulty (presence of the RAT deploy indication in the flight deck when the RAT is confirmed to be stowed), use dispatch tool K29005. This tool is only used to bypass the RAT deploy switch by connecting pins A and B on connector DM2921339P04. The status of the switch is used for indication purposes only and is not used in the logic to deploy the RAT during flight. The logic to deploy the RAT is unaffected while the dispatch tool is used. The RAT will physically deploy in the event of an emergency, however, the indication in the flight deck will continue to suggest that the RAT is still stowed.

Verify that the RAT deploys (AMM DDG 29-21-02) and, prior to each flight, visually confirm that the RAT is stowed.

1. Push the RAM AIR TURBINE deploy switch on the P5 panel to extend the RAT.
2. Verify that the RAT assembly is in the fully extended position by checking that the turbine lock plunger is fully disengaged from the turbine hub.
3. Stow the RAT prior to flight.
4. Visually confirm that the RAT is stowed and the RAT door is closed prior to each flight.

OPERATIONS NOTE

1. If dispatch tool K29005 is installed, RAT UNLOCKED advisory message will not be displayed.

29-21-02 Ram Air Turbine (RAT) Position Indication System

29-21-02-01 Switch UNLKD Light

Interval	Installed	Required	Procedure
C	1	0	**(P)**

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29-21-02 Ram Air Turbine (RAT) Position Indication System

29-21-02-02 Switch PRESS Light

Interval	Installed	Required	Procedure
C	1	0	**(P)**

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29-21-03 Ram Air Turbine (RAT) Heaters

Interval	Installed	Required	Procedure
C	2	1	**(P)**

One may be inoperative provided:
a. OAT at departure airport is not less than -35 degrees C.

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29-30-01 Hydraulic Pump Lights

29-30-01-01 FAULT Lights

Interval	Installed	Required	Procedure
C	6	0	**(P)**

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29-30-01 Hydraulic Pump Lights

29-30-01-02 ON Lights

Interval	Installed	Required	Procedure
C	2	0	**(P)**

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29-30-02 Hydraulic Synoptic Display

Interval	Installed	Required	Procedure
C	1	0	**(P)**

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OPERATIONS NOTE

1. For missing data on the Synoptic Display, selecting an alternate location for the display (Captain’s Inboard, First Officer’s Inboard, or Lower) may restore the missing data. Synoptic Displays containing missing data may continue to be used to the extent remaining data is useful. Airplane system faults will be annunciated by alerting and status messages.

29-31-01 Hydraulic System Pressure Transducers

29-31-01-01 Left and Right System Pressure Transducers

Interval	Installed	Required	Procedure
C	2	0	**(M) (P)**

May be inoperative provided:

a. Inoperative system pressure transducer is deactivated.
b. Associated system pump pressure indications operate normally.

- -

MAINTENANCE (M)

Note: Hydraulic system pressure transducers and hydraulic pump pressure transducers are interchangeable.

Deactivate the inoperative hydraulic system pressure transducer (AMM DDG 29-31-01).

1. For the left hydraulic system pressure transducer:
    A. Using a flight deck multi-function display only, open circuit breaker MEDC CH A L ENGINE and lock with a DO NOT CLOSE tag.
    B. Gain access to the inoperative system pressure transducer.
    C. Disconnect, cap and stow the associated transducer electrical connector.
    D. Close circuit breaker MEDC CH A L ENGINE.

        Note: If left engine MEDC channel A is also inoperative, do not close circuit breaker MEDC CHAN A L ENGINE. Lock circuit breaker MEDC CHAN A L ENGINE with an INOP tag.
2. For the right hydraulic system pressure transducer:
    A. Using a flight deck multi-function display only, open circuit breaker MEDC CH A R ENGINE and lock with a DO NOT CLOSE tag.
    B. Gain access to the inoperative system pressure transducer.
    C. Disconnect, cap and stow the associated transducer electrical connector.
    D. Close circuit breaker MEDC CH A R ENGINE.

        Note: If right engine MEDC channel A is also inoperative, do not close circuit breaker MEDC CHAN A R ENGINE. Lock circuit breaker MEDC CHAN A R ENGINE with an INOP tag.

29-31-01 Hydraulic System Pressure Transducers

29-31-01-02 Center System Pressure Transducer

Interval	Installed	Required	Procedure
C	1	0	**(M) (O) (P) (MV)**

May be inoperative provided:

a. Center system pressure transducer is deactivated.
b. Landing gear is secured in the down position.
c. Center system pump pressure indications operate normally.
d. Nose gear isolation system operates normally.
e. Airplane is dispatched in accordance with the Gear Down Dispatch data in Performance Dispatch (PD) chapter.

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MAINTENANCE (M)

Note: Hydraulic system pressure transducers and hydraulic pump pressure transducers are interchangeable.

Deactivate the inoperative center hydraulic system pressure transducer and secure the landing gear in the down position (AMM DDG 29-31-01).

1. Deactivate the inoperative center hydraulic system pressure transducer.
   A. Using a flight deck multi-function display only, open circuit breaker HYD PRESS SNSR-CHAN 4 and lock with a DO NOT CLOSE tag.
   B. Gain access to the inoperative system pressure transducer.
   C. Disconnect, cap and stow the associated transducer electrical connector.
   D. Close circuit breaker HYD PRESS SNSR-CHAN 4.
2. Secure the landing gear in the down position.
   A. Install landing gear downlock pins (dispatch tool J32011) for airplane flight with landing gear locked in the extended position.
   B. Using a flight deck multi-function display only, open the following circuit breakers and lock with an INOP tag:
      - MLG DOOR CTRL VLV OPEN-1
      - MLG DOOR CTRL VLV OPEN-2
      - LG LEVER LOCK
   C. On the MISC SYSTEM CTRLS (MSC) maintenance page, set the Overspeed Warning switch to GEAR DOWN.

OPERATIONS (O)

1. Airplane is dispatched in accordance with Gear Down Dispatch data in Performance Dispatch (PD) chapter.
2. Determine flight planning fuel adjustments by selecting Gear Down Dispatch in the Onboard Performance Tool (OPT).
   Note: The FMC does not support certain provisions for operations with the landing gear extended.
3. VMO GEAR DOWN memo message will be displayed.

29-31-02 Hydraulic Pump Pressure Indication Systems

Interval	Installed	Required	Procedure
C	6	3	**(M) (P)**

One in each system may be inoperative provided:

a. Inoperative pump pressure transducer is deactivated.
b. Associated pump is verified to operate normally before each departure.
c. Associated pump temperature indications operate normally.
d. Associated hydraulic system pressure transducer operates normally.

MAINTENANCE (M)

Note: Hydraulic system pressure transducers and hydraulic pump pressure transducers are interchangeable.

Deactivate the inoperative pump pressure transducer, and verify the hydraulic pump associated with the inoperative pump pressure indication is operating normally (AMM DDG 29-31-02).

1. For the left EDP inoperative hydraulic pump pressure transducer:
   A. Using a flight deck multi-function display only, open circuit breaker HYD PRESS SNSR-CHAN1 and lock with a DO NOT CLOSE tag.
   B. Gain access to the inoperative hydraulic pump pressure transducer.
   C. Disconnect, cap and stow the associated transducer electrical connector.
   D. Close circuit breaker HYD PRESS SNSR-CHAN1.
2. For the left EMP inoperative hydraulic pump pressure transducer:
   A. Using a flight deck multi-function display only, open circuit breaker MEDC CHAN B L ENGINE and lock with a DO NOT CLOSE tag.
   B. Gain access to the inoperative hydraulic pump pressure transducer.
   C. Disconnect, cap and stow the associated transducer electrical connector.
   D. Close circuit breaker MEDC CHAN B L ENGINE.
3. For the right EDP inoperative hydraulic pump pressure transducer:
   A. Using a flight deck multi-function display only, open circuit breaker HYD PRESS SNSR-CHAN2 and lock with a DO NOT CLOSE tag.
   B. Gain access to the inoperative hydraulic pump pressure transducer.
   C. Disconnect, cap and stow the associated transducer electrical connector.
   D. Close circuit breaker HYD PRESS SNSR-CHAN2.
4. For the right EMP inoperative hydraulic pump pressure transducer:
   A. Using a flight deck multi-function display only, open circuit breaker MEDC CHAN B R ENGINE and lock with a DO NOT CLOSE tag.
   B. Gain access to the inoperative hydraulic pump pressure transducer.
   C. Disconnect, cap and stow the associated transducer electrical connector.
   D. Close circuit breaker MEDC CHAN B R ENGINE.

5. For the center C1 inoperative hydraulic pump pressure transducer:
    A. Using a flight deck multi-function display only, open circuit breaker HYD PRESS SNSR-CHAN3 and lock with a DO NOT CLOSE tag.
    B. Gain access to the inoperative hydraulic pump pressure transducer.
    C. Disconnect, cap and stow the associated transducer electrical connector.
    D. Close circuit breaker HYD PRESS SNSR-CHAN3.
6. For the center C2 inoperative hydraulic pump pressure transducer:
    A. Using a flight deck multi-function display only, open circuit breaker HYD PRESS SNSR-CHAN2 and lock with a DO NOT CLOSE tag.
    B. Gain access to the inoperative hydraulic pump pressure transducer.
    C. Disconnect, cap and stow the associated transducer electrical connector.
    D. Close circuit breaker HYD PRESS SNSR-CHAN2.
7. Provide electric power to the airplane.
8. If the inoperative pressure indication system is for an engine-driven pump, do one of the following:
    - Dry motor the engine.
    - Start the engine.
9. Set the associated hydraulic pump switch to ON for at least 60 seconds.
10. For the hydraulic system associated with the inoperative pump pressure indication, verify the system pressure indication on the HYDRAULIC maintenance page 1 of 2 is greater than 4700 psi (3000 psi if dry motoring the engine for an engine-driven pump).

29-31-03 Hydraulic Reservoir Auto-Bleed Valves System

29-31-03A Manual Bleeding Not Required

Interval	Installed	Required	Procedure
C	3	0	**(M) (P)**

May be inoperative provided:

a. Inoperative auto-bleed valve is not indicating presence of air.
b. Inoperative auto-bleed valve is deactivated closed.

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MAINTENANCE (M)

Note: Manual bleeding is not required when BLD STATUS shows OFF in HYDRAULIC MAINTENANCE page 1.

Deactivate the bleed valve closed (AMM DDG 29-31-03).

29-31-03 Hydraulic Reservoir Auto-Bleed Valves System

29-31-03B Manual Bleeding Required

Interval	Installed	Required	Procedure
C	3	0	**(M) (P)**

May be inoperative provided:

a. Associated hydraulic system reservoir is verified to be free of trapped air.

b. Inoperative auto-bleed valve is deactivated closed.

* * *

MAINTENANCE (M)

Note: Manual bleeding is required when BLD STATUS shows BLD in HYDRAULIC MAINTENANCE page 1.

Verify that reservoir is free of trapped air and deactivate inoperative auto-bleed valve closed (AMM DDG 29-31-03).

Note: Any servicing of reservoir will require verification that it is free of air.

1. Manually bleed air from the associated reservoir.
2. For the left hydraulic system reservoir auto-bleed valve inoperative:
   A. Using a flight deck multi-function display only, open circuit breaker HYD AUTO BLEED VLV L and lock with an INOP tag.
3. For the center hydraulic system reservoir auto-bleed valve inoperative:
   A. Using a flight deck multi-function display only, open circuit breaker HYD AUTO BLEED VLV C and lock with an INOP tag.
4. For the right hydraulic system reservoir auto-bleed valve inoperative:
   A. Using a flight deck multi-function display only, open circuit breaker HYD AUTO BLEED VLV R and lock with an INOP tag.

29-32-01 Hydraulic Pump Temperature Indications

Interval	Installed	Required	Procedure
C	6	3	**(M) (P)**

One in each system may be inoperative provided:

a. Associated pump pressure indications operate normally.
b. Associated reservoir temperature indications operate normally.

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MAINTENANCE (M)

Disconnect, cap and stow the electrical connector to the inoperative temperature transducer (AMM DDG 29-32-01).

29-33-01 Hydraulic Fluid Quantity Indications (Flight Deck)

29-33-01-01 Left and Right System Quantity Indications

Interval	Installed	Required	Procedure
C	2	0	**(M) (P)**

May be inoperative provided:

a. Associated reservoir level is verified normal before each departure.

b. Associated system pressure indication operates normally.

* * *

MAINTENANCE (M)

Verify the associated system reservoir quantity level is normal before each departure (AMM DDG 29-33-01).

1. Gain access to the associated system reservoir visual quantity gauge.
2. Verify the reservoir visual quantity gauge indicates in the green band.

29-33-01 Hydraulic Fluid Quantity Indications (Flight Deck)

29-33-01-02 Center System Quantity Indication

Interval	Installed	Required	Procedure
B	1	0	**(M) (P)**

May be inoperative provided:

a. Center system reservoir level is verified normal before each departure.
b. Center system pressure indication operates normally.
c. Reserve steering isolation system is considered inoperative.
d. Nose gear isolation system is considered inoperative.
e. Alternate gear extension isolation system is considered inoperative.
f. C1 EMP Selector AUTO position is considered inoperative.

Note: The airplane must also be dispatched using MEL Item 29-11-03-01A, 29-11-04, 29-11-05 and 29-11-06.

MAINTENANCE (M)

Verify the center system reservoir quantity level is normal before each departure (AMM DDG 29-33-01).

1. Gain access to the center system reservoir visual quantity gauge.
2. Verify the center system reservoir visual quantity gauge indicates in the green band.

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Table of Contents

ATA 30 ICE & RAIN PROTECTION ATA 30-1
Table Of Contents ATA 30-1
30-11-01 Wing Ice Protection System (WIPS) ATA 30-3
  30-11-01-01 Wing Ice Protection Heat Zones ATA 30-4
  30-11-01-02 Wing Ice Protection Channels ATA 30-5
30-11-02 Wing Anti-Ice (WAI) Indications ATA 30-6
30-21-01 Engine Anti-Ice (EAI) Systems ATA 30-7
  30-21-01-01 Engine Anti-Ice Pressure Regulating and Shutoff Valves (PRSOV) ATA 30-9
  30-21-01-02 Engine Anti-Ice Pressure Regulating and Shutoff Valves (PRSOV) (RR) ATA 30-10
  30-21-01-03 Engine Anti-Ice Pressure Regulating Valves (PRV) ATA 30-12
  30-21-01-04 Engine Anti-Ice Pressure Regulating Valves (PRV) (RR) ATA 30-13
  30-21-01-06 Pressure Sensors ATA 30-14
    30-21-01-06-01 Pressure Sensor Number 1 ATA 30-15
    30-21-01-06-02 Pressure Sensor Number 2 ATA 30-16
  30-21-01-07 Pressure Sensors (RR) ATA 30-17
30-21-02 Engine Anti-Ice (EAI) Indications ATA 30-18
30-22-01 Cabin Air Compressor Inlet Ice Protection Systems (CIPS) ATA 30-19
  30-22-01A Packs Operate Normally ATA 30-19
  30-22-01B Opposite Pack Operates Normally ATA 30-20
  30-22-01C Associated Pack Operates Normally ATA 30-21
30-31-01 Pitot Probe Heater Systems ATA 30-22
  30-31-01-01 Right Pitot Heater ATA 30-22
  30-31-01-02 Left Pitot Heater ATA 30-23
  30-31-01-03 Center Pitot Heater ATA 30-24
30-32-01 Angle Of Attack (AOA) Anti-Ice System ATA 30-25
30-33-01 Total Air Temperature (TAT) Probe Heater System ATA 30-26
  30-33-01-01 RR ATA 30-26
30-41-01 Flight Deck Forward Window Primary Heat Channels ATA 30-27

30-41-02 Flight Deck Side Window Heat Channels ATA 30-28
30-41-03 Flight Deck Forward Window Backup Heat Channels ATA 30-29
30-41-04 Window Heat Switch Lights ATA 30-30
  30-41-04-01 INOP Lights ATA 30-30
  30-41-04-02 ON Lights ATA 30-31
30-41-05 Window Heat Software ATA 30-32
30-42-01 Windshield Wiper System ATA 30-33
  30-42-01-01 Low Speed Functions ATA 30-34
  30-42-01-02 High Speed Functions ATA 30-35
    30-42-01-02A One Inoperative ATA 30-35
    30-42-01-02B Both Inoperative ATA 30-36
  30-42-01-03 Intermittent Functions ATA 30-37
30-44-01 Windshield Washer System ATA 30-38
30-71-01 Water Supply In-Line Heaters ATA 30-39
30-81-01 Ice Detectors ATA 30-40
  30-81-01A One Inoperative ATA 30-40
  30-81-01B Both Inoperative ATA 30-41

30-11-01 Wing Ice Protection System (WIPS)

Interval	Installed	Required	Procedure
C	1	0	**(P) (MV)**

May be inoperative provided:

a. Airplane is not operated in known or forecast icing conditions.
b. Flight remains within 120 minutes of landing at a suitable airport.

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30-11-01 Wing Ice Protection System (WIPS)

30-11-01-01 Wing Ice Protection Heat Zones

Interval	Installed	Required	Procedure
C	48	46	**(P)**

One heat zone pair in symmetrical slats may be inoperative.

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30-11-01 Wing Ice Protection System (WIPS)

30-11-01-02 Wing Ice Protection Channels

Interval	Installed	Required	Procedure
C	3	2	**(P)**

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30-11-02 Wing Anti-Ice (WAI) Indications

Interval	Installed	Required	Procedure
C	2	0	**(P)**

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30-21-01 Engine Anti-Ice (EAI) Systems

Interval	Installed	Required	Procedure
C	2	1	**(M) (P) (MV)**

One may be inoperative provided:
a. Associated PRSOV is locked closed.
b. Associated engine ignition systems operate normally.
c. Associated engine anti-ice control switch remains OFF.
d. Airplane is not operated in known or forecast icing conditions.
e. Flight remains within 120 minutes of landing at a suitable airport.

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MAINTENANCE (M)

Lock inoperative PRSOV in the closed position (AMM DDG 30-21-01).

1. Deactivate the leading edge slats in the retracted position.
2. For PRSOV failed open:
   A. Inspect engine cowling for damage.
3. Deactivate the associated thrust reverser for ground maintenance.
4. Set associated anti-ice panel (P5) engine anti-ice selector OFF.
5. For left engine:
   A. Using a flight deck multi-function display only, open the following circuit breakers and lock with a DO NOT CLOSE tag.
      - MEDC CHAN A L ENGINE
      - MEDC CHAN B L ENGINE
6. For right engine:
   A. Using a flight deck multi-function display only, open the following circuit breakers and lock with a DO NOT CLOSE tag.
      - MEDC CHAN A R ENGINE
      - MEDC CHAN B R ENGINE
7. Gain access to PRSOV.
8. Lock PRSOV in closed position.
9. Disconnect, cap and stow the electrical connector from the associated EAI valve controller.

   Note: Disconnecting the electrical connector will cause the status message EAI PRSOV CONTROLLER L/R to appear.
10. For left engine:
    A. Close the following circuit breakers.
       - MEDC CHAN A L ENGINE

         Note: If left engine MEDC channel A is also inoperative, do not close circuit breaker MEDC CHAN A L ENGINE. Lock circuit breaker MEDC CHAN A L ENGINE with an INOP tag.
       - MEDC CHAN B L ENGINE

11. For right engine:
    A. Close the following circuit breakers.
        - MEDC CHAN A R ENGINE

          Note: If right engine MEDC channel A is also inoperative, do not close circuit breaker MEDC CHAN A R ENGINE. Lock circuit breaker MEDC CHAN A R ENGINE with an INOP tag.
        - MEDC CHAN B R ENGINE
11. Activate the associated thrust reverser after ground maintenance.
12. Activate the leading edge slats.

OPERATIONS NOTE

1. Set associated ANTI-ICE Panel (P5) Engine Anti-ice selector OFF.

30-21-01 **Engine Anti-Ice (EAI) Systems**

30-21-01-01 **Engine Anti-Ice Pressure Regulating and Shutoff Valves (PRSOV)**

Interval	Installed	Required	Procedure
C	2	1	**(M) (P) (MV)**

One may be inoperative provided:

a. Associated PRSOV is locked closed.
b. Associated engine ignition systems operate normally.
c. Associated engine anti-ice control switch remains OFF.
d. Airplane is not operated in known or forecast icing conditions.
e. Flight remains within 120 minutes of landing at a suitable airport.

MAINTENANCE (M)

1. Use MEL Item 30-21-01 (M) procedure.

OPERATIONS NOTE

1. Set associated ANTI-ICE Panel (P5) Engine Anti-ice selector OFF.

30-21-01 Engine Anti-Ice (EAI) Systems

30-21-01-02 Engine Anti-Ice Pressure Regulating and Shutoff Valves (PRSOV) (RR)

Interval	Installed	Required	Procedure
C	2	1	**(M) (O) (P) (MV)**

One may be inoperative provided:

a. Inoperative valve is locked in mid position.
b. Associated PRV operates normally.
c. Operations are limited to OAT 38 degrees C or below.
d. Appropriate performance adjustments are applied.

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MAINTENANCE (M)

Note: 1. Do not perform a static ground maintenance run at takeoff thrust. Static ground operations at takeoff thrust may overheat the components in the fan compartment of the engine.
2. Perform a General Visual Inspection (GVI) of the engine inlet cavity for heat damage and applicable corrective actions at the completion of the dispatch interval period in accordance with Boeing Requirements Bulletin B787-81205-SB540024-00 RB Issue 001 and Collins Service Bulletin 787-R71-034 Rev 00 or later approved revisions.

Deactivate associated EAI PRSOV in the mid position (AMM DDG 30-21-01).

1. Deactivate the leading edge slats in the retracted position.
2. Deactivate the associated thrust reverser for ground maintenance.
3. For left engine:
    A. Using a flight deck multi-function display only, open the following circuit breakers and lock with a DO NOT CLOSE tag.
        - MEDC CHAN A L ENGINE
        - MEDC CHAN B L ENGINE
4. For right engine:
    A. Using a flight deck multi-function display only, open the following circuit breakers and lock with a DO NOT CLOSE tag.
        - MEDC CHAN A R ENGINE
        - MEDC CHAN B R ENGINE
5. Gain access to PRSOV.
6. Lock PRSOV in the mid position.
7. Disconnect, cap and stow the electrical connector from the associated EAI valve controller.

    Note: Disconnecting the electrical connector will cause the status message EAI PRSOV CONTROLLER L/R to appear.
8. For left engine:
    A. Close the following circuit breakers.
        - MEDC CHAN A L ENGINE

        Note: If left engine MEDC channel A is also inoperative, do not close circuit breaker MEDC CHAN A L ENGINE. Lock circuit breaker MEDC CHAN A L ENGINE with an INOP tag.
        - MEDC CHAN B L ENGINE

9. For right engine:
   A. Close the following circuit breakers.
      - MEDC CHAN A R ENGINE

        Note: If right engine MEDC channel A is also inoperative, do not close circuit breaker MEDC CHAN A R ENGINE. Lock circuit breaker MEDC CHAN A R ENGINE with an INOP tag.
      - MEDC CHAN B R ENGINE
10. Activate the associated thrust reverser after ground maintenance.
11. Activate the leading edge slats.
12. The associated ENG CORE ANTI-ICE advisor message may be displayed during ground operations.

OPERATIONS (O)

Note: Do not perform a static ground maintenance run at takeoff thrust. Static ground operations at takeoff thrust may overheat the components in the fan compartment of the engine.

1. Set ANTI-ICE Panel (P5) Engine Anti-ice selectors ON.

   Note: When an EAI selector is set to ON and the temperature is greater than 10 degrees C, the ANTI-ICE ON advisory message will be displayed.
2. Operations are limited to OAT 38 degrees C or below.
3. Base performance limited weights on EAI ON.
4. Increase flight planning fuel by 1.4%.
5. For ETOPS flight planning:
   A. Increase ETOPS engine inoperative Critical Fuel Reserves by 1.6%.
6. Associated engine will operate at a higher idle setting than the opposite engine.
7. The associated ENG CORE ANTI-ICE advisory & ENG BAI VALVE CLOSED status messages may be displayed on descent or during ground operations.
8. The associated ENG CORE ANTI-ICE advisory message may be displayed on descent or during ground operations.
9. The ANTI-ICE ENG advisory message may be displayed during ground operations prior to takeoff, flight crew should accomplish the associated non- normal checklist. If ANTI-ICE ENG clears, takeoff is allowed.

30-21-01 Engine Anti-Ice (EAI) Systems

30-21-01-03 Engine Anti-Ice Pressure Regulating Valves (PRV)

Interval	Installed	Required	Procedure
C	2	1	**(M) (P) (MV)**

One may be inoperative provided:

a. Associated PRSOV is locked closed.
b. Associated engine ignition systems operate normally.
c. Associated engine anti-ice control switch remains OFF.
d. Airplane is not operated in known or forecast icing conditions.
e. Flight remains within 120 minutes of landing at a suitable airport.

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MAINTENANCE (M)

1. Use MEL Item 30-21-01 (M) procedure.

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30-21-01 Engine Anti-Ice (EAI) Systems

30-21-01-04 Engine Anti-Ice Pressure Regulating Valves (PRV) (RR)

Interval	Installed	Required	Procedure
C	2	1	**(M) (O) (P) (MV)**

One may be inoperative provided:

a. Inoperative valve is locked in mid position.
b. Associated PRSOV operates normally.
c. Associated main engine data concentrator (MEDC) channel A operates normally.
d. Associated EAI PRSOV controller operates normally.
e. At least one associated pressure sensor operates normally.
f. Operations are limited to OAT 38 degrees C or below.

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MAINTENANCE (M)

Lock inoperative PRV in the mid position (AMM DDG 30-21-01).

1. For left engine:
   A. Using a flight deck multi-function display only, open the following circuit breakers and lock with a DO NOT CLOSE tag.
      - MEDC CHAN A L ENGINE
      - MEDC CHAN B L ENGINE
2. For right engine:
   A. Using a flight deck multi-function display only, open the following circuit breakers and lock with a DO NOT CLOSE tag.
      - MEDC CHAN A R ENGINE
      - MEDC CHAN B R ENGINE
3. Gain access to PRV.
4. Lock PRV in the mid position.
5. For left engine:
   A. Close the following circuit breakers.
      - MEDC CHAN A L ENGINE
      - MEDC CHAN B L ENGINE
6. For right engine:
   A. Close the following circuit breakers.
      - MEDC CHAN A R ENGINE
      - MEDC CHAN B R ENGINE

OPERATIONS (O)

1. Operations are limited to OAT 38 degrees C or below.

30-21-01 Engine Anti-Ice (EAI) Systems

30-21-01-06 Pressure Sensors

Interval	Installed	Required	Procedure
C	4	2	**(M) (P) (MV)**

May be inoperative on one engine provided:

a. Associated PRSOV is locked closed.
b. Associated engine ignition systems operate normally.
c. Associated engine anti-ice control switch remains OFF.
d. Airplane is not operated in known or forecast icing conditions.
e. Flight remains within 120 minutes of landing at a suitable airport.

* * *

MAINTENANCE (M)

1. Use MEL Item 30-21-01 (M) procedure.

30-21-01 Engine Anti-Ice (EAI) Systems
30-21-01-06 Pressure Sensors
30-21-01-06-01 Pressure Sensor Number 1

Interval	Installed	Required	Procedure
C	2	0	**(P)**

May be inoperative provided:

a. Associated pressure sensor number 2 operates normally.

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30-21-01 **Engine Anti-Ice (EAI) Systems**
30-21-01-06 **Pressure Sensors**

30-21-01-06-02 **Pressure Sensor Number 2**

Interval	Installed	Required	Procedure
C	2	0	**(P)**

May be inoperative provided:

a. Associated pressure sensor number 1 operates normally.

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30-21-01 Engine Anti-Ice (EAI) Systems

30-21-01-07 Pressure Sensors (RR)

Interval	Installed	Required	Procedure
C	4	2	**(M) (O) (P) (MV)**

May be inoperative on one engine provided:

a. Associated PRSOV is locked in mid position.
b. Associated PRV operates normally.
c. Operations are limited to OAT 38 degrees C or below.
d. Appropriate performance adjustments are applied.

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MAINTENANCE (M)

1. Use MEL Item 30-21-02 (M) procedure.

OPERATIONS (O)

1. Use MEL Item 30-21-02 (O) procedure.

30-21-02 Engine Anti-Ice (EAI) Indications

Interval	Installed	Required	Procedure
C	2	0	**(P)**

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30-22-01 Cabin Air Compressor Inlet Ice Protection Systems (CIPS)

30-22-01A Packs Operate Normally

Interval	Installed	Required	Procedure
A	2	0	**(M) (O) (P)**

May be inoperative provided:

a. Inoperative system is deactivated.
b. Air conditioning packs operate normally.
c. Airport OAT remains at or above −35 degrees C since last landing.
d. Repairs are made within 30 calendar days.

MAINTENANCE (M)

Note:
1. For an air conditioning pack to be operating normally, certain items associated with that system must operate normally. See MEL Item 21-51-01 for a list of those items.
2. ENG TCMA L/R status messages may be displayed during taxi in and must be addressed prior to the next departure.

Deactivate the inoperative cabin air compressor inlet ice protection system (AMM DDG 30-22-01).

1. For the left CIPS inoperative:
   A. Using a flight deck multi-function display only, open circuit breaker CAC ICE PROTECT-L and lock with an INOP tag.
2. For the right CIPS inoperative:
   A. Using a flight deck multi-function display only, open circuit breaker CAC ICE PROTECT-R and lock with an INOP tag.

OPERATIONS (O)

1. The ANTI-ICE PACKS advisory message may be displayed.
2. For EICAS TAT indication blank, manually enter OAT on the Thrust Limit page of the FMC. Update OAT and recalculate V-speeds if conditions change before dispatch. Normal EICAS TAT indication will return as airspeed increases above 50 knots.
3. ICE DETECTORS advisory, ICE DETECTOR L/R status and WING ANTI- ICE SYS status messages may be displayed, but should clear when OAT is entered manually. If messages remain displayed, the faults must be addressed or the airplane must be dispatched per the applicable MEL item.

30-22-01 Cabin Air Compressor Inlet Ice Protection Systems (CIPS)

30-22-01B Opposite Pack Operates Normally

Interval	Installed	Required	Procedure
C	2	1	**(M) (O) (P)**

One may be inoperative provided:

a. Inoperative system is deactivated.
b. Opposite air conditioning pack operates normally.
c. Airport OAT remains at or above −35 degrees C since last landing.

MAINTENANCE (M)

1. Use MEL Item 30-22-01A (M) procedure.

OPERATIONS (O)

1. Use MEL Item 30-22-01A (O) procedure.

30-22-01 Cabin Air Compressor Inlet Ice Protection Systems (CIPS)

30-22-01C Associated Pack Operates Normally

Interval	Installed	Required	Procedure
C	2	1	**(M) (O) (P) (MV)**

One may be inoperative provided:

a. Inoperative system is deactivated.
b. Airplane is not operated in known or forecast icing.
c. Airport OAT remains at or above −35 degrees C since last landing.
d. Flight remains within 120 minutes of landing at a suitable airport.

MAINTENANCE (M)

1. Use MEL Item 30-22-01A (M) procedure.

OPERATIONS (O)

1. Use MEL Item 30-22-01A (O) procedure.

30-31-01 Pitot Probe Heater Systems

30-31-01-01 Right Pitot Heater

Interval	Installed	Required	Procedure
B	1	0	**(M) (P)**

May be inoperative provided:

a. Left and center pitot probes are inspected before each departure.
b. Left and center pitot probe heater systems operate normally.
c. Left and center pitot air data modules operate normally.
d. Static air data modules operate normally.
e. AIR DATA/ATT instrument source switches operate normally.
f. Approach minimums do not require its use.

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MAINTENANCE (M)

Note: The left, center and right pitot probes are interchangeable. Refer to the Illustrated Parts Database (IPD) for location and part number compatibility.

Inspect the left and center pitot probes prior to each departure (AMM DDG 30-31-01).

1. Visually examine the left and center pitot probe external installations for damage and unwanted material in the pitot probe opening. If damage or unwanted material is noted, perform pitot probe - inspection.

OPERATIONS NOTE

1. The NO LAND 3 advisory message will be displayed.

30-31-01 Pitot Probe Heater Systems

30-31-01-02 Left Pitot Heater

Interval	Installed	Required	Procedure
B	1	0	**(M) (P)**

May be inoperative provided:

a. Right and center pitot probes are inspected before each departure.
b. Right and center pitot probe heater systems operate normally.
c. Right and center pitot air data modules operate normally.
d. Static air data modules operate normally.
e. AIR DATA/ATT instrument source switches operate normally.
f. Approach minimums do not require its use.

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MAINTENANCE (M)

Note: The left, center and right pitot probes are interchangeable. Refer to the Illustrated Parts Database (IPD) for location and part number compatibility.

Inspect the right and center pitot probes before each departure (AMM DDG 30-31-01).

1. Visually examine the right and center pitot probe external installations for damage and unwanted material in the pitot probe opening. If damage or unwanted material is noted, perform pitot probe - inspection.

OPERATIONS NOTE

1. The NO LAND 3 advisory message will be displayed.

30-31-01 Pitot Probe Heater Systems

30-31-01-03 Center Pitot Heater

Interval	Installed	Required	Procedure
B	1	0	**(M) (P) (MV)**

May be inoperative provided:

a. Left and right pitot probes are inspected before each departure.
b. Left and right pitot probe heater systems operate normally.
c. Left and right pitot air data modules operate normally.
d. Static air data modules operate normally.
e. AIR DATA/ATT instrument source switches operate normally.
f. Airplane is not operated in visible moisture.
g. Airplane is not operated in known or forecast icing conditions.
h. Approach minimums do not require its use.
i. Flight remains within 120 minutes of landing at a suitable airport.

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MAINTENANCE (M)

Note: The left, center and right pitot probes are interchangeable. Refer to the Illustrated Parts Database (IPD) for location and part number compatibility.

Inspect the left and right pitot probes before each departure (AMM DDG 30-31-01).

1. Visually examine the left and right pitot probe external installations for damage and unwanted material in the pitot probe opening. If damage or unwanted material is noted, perform pitot probe - inspection.

OPERATIONS NOTE

1. The NO LAND 3 advisory message will be displayed.

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30-32-01 Angle of Attack (AOA) Anti-Ice System

Interval	Installed	Required	Procedure
B	2	1	**(P)**

One may be inoperative provided:
a. Approach minimums do not require its use.

Note: The airplane must also be dispatched using MEL item 34-12-03.

OPERATIONS NOTE

1. The NO LAND 3 advisory message will be displayed.

30-33-01 Total Air Temperature (TAT) Probe Heater System

30-33-01-01 RR

Interval	Installed	Required	Procedure
C	1	0	**(M) (O) (P) (MV)**

May be inoperative provided:

a. Channel A and B sensors (T20) on both engines are verified to operate normally.
b. Airplane is not operated in known or forecast icing conditions.
c. Flight remains within 120 minutes of landing at a suitable airport.

MAINTENANCE (M)

Verify T20 sensors A and B operate normally for both engines (AMM DDG 30-33-01).

1. On the MISC SYSTEM CTRLS (MSC) maintenance page, set the left and right EEC MAINT switches to TEST.
2. On EPCS maintenance page 1, verify that a temperature value is displayed for the following sensors:
   A. LEFT ENGINE A - T20
   B. LEFT ENGINE B - T20
   C. RIGHT ENGINE A - T20
   D. RIGHT ENGINE B - T20
   Note: A T20 sensor that is not operating normally will display blank.
3. On EPCS maintenance page 1, verify that the Ch.A/Ch.B T20 readings do not differ more than 5.0 degrees C.

OPERATIONS (O)

1. Flight must remain within 120 minutes of landing at a suitable airport.

30-41-01 Flight Deck Forward Window Primary Heat Channels

Interval	Installed	Required	Procedure
C	2	1	**(P) (MV)**

One may be inoperative provided:

a. Associated switch remains off.
b. Associated forward window backup heat channel operates normally.
c. Side window heat channels operate normally.
d. Airplane is not operated in known or forecast icing conditions.
e. Flight remains within 120 minutes of landing at a suitable airport

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OPERATIONS NOTE

1. If cracks are observed in the associated window, notify maintenance to inspect the window per AMM DDG 24-25-01.

30-41-02 Flight Deck Side Window Heat Channels

Interval	Installed	Required	Procedure
C	2	1	**(P)**

One may be inoperative provided:

a. Associated switch remains off.

b. Forward window primary heat channels operate normally.

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30-41-03 Flight Deck Forward Window Backup Heat Channels

Interval	Installed	Required	Procedure
C	2	1	**(P)**

One may be inoperative provided:

a. Associated switch remains off.
b. Forward window primary heat channels operate normally.
c. Side window heat channels operate normally.

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30-41-04 Window Heat Switch Lights

30-41-04-01 INOP Lights

Interval	Installed	Required	Procedure
C	4	0	**(P)**

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30-41-04 Window Heat Switch Lights

30-41-04-02 ON Lights

Interval	Installed	Required	Procedure
C	6	0	**(P)**

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30-41-05 Window Heat Software

Interval	Installed	Required	Procedure
C	3	2	**(P)**

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30-42-01 Windshield Wiper System

Interval	Installed	Required	Procedure
C	2	0	**(P)**

May be inoperative provided:

a. Airplane is not operated in precipitation within five statute miles of airport of departure or intended landing.

b. Approach minimums do not require its use.

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30-42-01 Windshield Wiper System

30-42-01-01 Low Speed Functions

Interval	Installed	Required	Procedure
C	2	0	**(M) (P)**

May be inoperative provided:

a. Associated high speed function is verified to operate normally.

MAINTENANCE (M)

Verify associated high speed function operates normally (AMM DDG 30-42-01).

1. Clean associated windshield and supply water to the windshield before operating the wiper.
2. Set associated wiper/washer panel (P5) wiper switch to HIGH.
3. Confirm windshield wiper high speed function operates normally.

30-42-01 **Windshield Wiper System**

30-42-01-02 **High Speed Functions**

30-42-01-02A **One Inoperative**

Interval	Installed	Required	Procedure
C	2	1	**(M) (P)**

One may be inoperative provided:
a. Associated low speed function is verified to operate normally.

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MAINTENANCE (M)

Verify associated low speed function operates normally (AMM DDG 30-42-01).

1. Clean associated windshield and supply water to the windshield before operating the wiper.
2. Set associated wiper/washer panel (P5) wiper switch to LOW.
3. Confirm windshield wiper low speed function operates normally.

30-42-01 **Windshield Wiper System**
30-42-01-02 **High Speed Functions**

30-42-01-02B **Both Inoperative**

Interval	Installed	Required	Procedure
C	2	0	**(M) (P)**

May be inoperative provided:

a. Both low speed functions are verified to operate normally.
b. Airplane is not operated in known or forecast precipitation of moderate or greater intensity within 5 statute miles of the airport of departure or intended landing.

* * *

MAINTENANCE (M)

Verify low speed function operates normally (AMM DDG 30-42-01).

1. Clean windshield and supply water to the windshield before operating the wipers.
2. Set wiper/washer panel (P5) wiper switches to LOW.
3. Confirm windshield wipers low speed function operates normally.

30-42-01 Windshield Wiper System

30-42-01-03 Intermittent Functions

Interval	Installed	Required	Procedure
C	2	0	**(P)**

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30-44-01 Windshield Washer System

Interval	Installed	Required	Procedure
D	1	0	**(P)**

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30-71-01 Water Supply In-line Heaters

Interval	Installed	Required	Procedure
C	–	0	**(M) (P)**

May be inoperative deactivated.

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MAINTENANCE (M)

Deactivate inoperative heater (AMM DDG 30-71-01).

1. Using a flight deck multi-function display only, open the circuit breaker associated with the inoperative heater and lock with an INOP tag.
    - WATER SUPPLY HTR-FWD EE BAY
    - WATER SUPPLY HTR-OFCR
    - WATER SUPPLY HTR-OACR
    - WATER SUPPLY HTR-AFT CARGO 1
    - WATER SUPPLY HTR-FWD CARGO 1
    - WATER SUPPLY HTR-OVERWING
    - WATER SUPPLY HTR-TANKS
    - WATER SUPPLY HTR-FWD MONUMENTS
    - WATER UV TREATMENT
    - WATER SUPPLY HTR-AFT CARGO 2
    - WATER SUPPLY HTR-FWD CARGO 2
    - WATER SUPPLY HTR-PUMP IO
    - WATER SUPPLY HTR-AFT SUPPLY
    - WATER SUPPLY HTR-PUMP MANIFOLD
    - WASTE RINSE NIPPLE HEATER

30-81-01 Ice Detectors

30-81-01A One Inoperative

Interval	Installed	Required	Procedure
C	2	1	**(P)**

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30-81-01 **Ice Detectors**

30-81-01B **Both Inoperative**

Interval	Installed	Required	Procedure
C	2	0	**(O) (P)**

May be inoperative provided:

a. Engine and wing anti-ice systems are operated manually.

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OPERATIONS (O)

1. Set engine and wing anti-ice systems OFF when not in use. Operate engine and wing anti-ice systems manually.

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Table of Contents

ATA 31 **INDICATING/RECORDING SYSTEMS** ATA 31-1
Table Of Contents ATA 31-1
31-31-01 Digital Voice-Data Recorder Systems ATA 31-4
31-31-01-01 Cockpit Voice Recorder (CVR) Functions ATA 31-4
31-31-01-01A One Inoperative ATA 31-4
31-31-01-01B Both Inoperative ATA 31-5
31-31-01-02 Flight Data Recorder (FDR) Functions ATA 31-6
31-31-01-02A One Inoperative ATA 31-6
31-31-01-02B Both Inoperative ATA 31-7
31-31-01-03 Datalink Recorder (DLR) Functions ATA 31-8
31-31-01-03A One Inoperative ATA 31-8
31-31-01-03B Both Inoperative ATA 31-9
31-31-01-04 Recorder Independent Power Supply ATA 31-10
31-33-01 Flight Deck Printer ATA 31-11
31-33-01B Procedures Do Not Require Use ATA 31-11
31-33-01-01 Miscellaneous Features ATA 31-12
31-51-01 Master WARNING Lights ATA 31-13
31-51-02 Master CAUTION Lights ATA 31-14
31-51-03 Autopilot Disconnect Warning Function ATA 31-15
31-51-04 Nose Gear Pressure Transducer System ATA 31-16
31-61-01 Display Units (DU) ATA 31-17
31-61-01-01 Lower DU ATA 31-17
31-61-01-02 Left Inboard DU ATA 31-18
31-61-01-03 Left Outboard DU ATA 31-19
31-61-01-04 Display Unit Brightness/Contrast Controls ATA 31-20
31-61-02 Graphics Generator Systems ATA 31-21
31-61-02-01 Graphics Generator Modules (GGMs) ATA 31-21
31-61-02-02 Display Unit Interface ATA 31-22

31-61-03 Touchpad Cursor Control Devices (CCD) ATA 31-23
31-61-03-01 Cursor Location Lights ATA 31-24
31-61-03-02 EFB, L, R, LWR Switch Lights ATA 31-25
31-61-04 Multifunction Keypads (MFKs) ATA 31-26
31-61-04-01 SYS, CDU, INFO, CHKL, COMM, ND Switches ATA 31-27
31-61-04-02 PREV PAGE, NEXT PAGE, EXEC Switches ATA 31-28
31-61-04-03 Rotary CURSOR CONTROL Selector ATA 31-29
31-61-04-04 Switch Lights, Key Lights, EXEC Lights ATA 31-30
31-61-05 EFIS/DSP Panels ATA 31-31
31-61-05-01 Display Lights ATA 31-32
31-61-05-02 Switch Lights ATA 31-33
31-61-06 PFD/MFD Selector Switches ATA 31-34
31-61-06-01 OUTBD Position ATA 31-34
31-61-06-02 INBD Position ATA 31-35
31-61-06-03 Left NORM Position ATA 31-36
31-61-06-03A Switch in OUTBD ATA 31-36
31-61-06-03B Switch in INBD ATA 31-37
31-61-07 Instrument Source (AIR DATA/ATT) Selector Switches ATA 31-38
31-61-07-01 ALTN Position ATA 31-38
31-61-08 Clock Switches ATA 31-39
31-61-09 Heading Reference (HDG REF) Switch ATA 31-40
31-61-09-01 TRUE Function ATA 31-40
31-61-09-02 NORM Light ATA 31-41
31-61-09-03 TRUE Light ATA 31-42
31-61-10 Remote Light Sensor (RLS) System ATA 31-43
31-61-11 Electronic Checklist (ECL) System ATA 31-44
31-61-11-01 ECL Closed Loop Switch Indications ATA 31-45
31-61-12 EICAS Status Messages ATA 31-46

31-61-12A System Used . . . . . ATA 31-46
31-61-12B System Considered Inoperative . . . . . ATA 31-47

31-61-13 Airport Map Function . . . . . ATA 31-48
31-61-13A Procedures Require Use . . . . . ATA 31-48
31-61-13B Procedures Do Not Require Use . . . . . ATA 31-49

31-61-14 Head-Up Display (HUD) Systems . . . . . ATA 31-50
31-61-14B Procedures Do Not Require Use . . . . . ATA 31-50
31-61-14-01 Low Visibility Takeoff Function . . . . . ATA 31-51
31-61-14-01A Takeoff Minima Do Not Require Use . . . . . ATA 31-51
31-61-14-01B Procedures Do Not Require Use . . . . . ATA 31-52
31-61-14-02 De-Clutter Switches . . . . . ATA 31-53
31-61-14-03 Brightness (BRT) Controls . . . . . ATA 31-54

31-61-15 Display Panel Interface . . . . . ATA 31-55

31-61-16 Displays Airplane Sequence Number Monitor . . . . . ATA 31-56

31-61-17 Clock ELAPSED TIME Displays . . . . . ATA 31-57

31-31-01 Digital Voice-Data Recorder Systems

31-31-01-01 Cockpit Voice Recorder (CVR) Functions

31-31-01-01A One Inoperative

Interval	Installed	Required	Procedure
C	2	1	**(P)**

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31-31-01 Digital Voice-Data Recorder Systems

31-31-01-01 Cockpit Voice Recorder (CVR) Functions

31-31-01-01B Both Inoperative

Interval	Installed	Required	Procedure
A	2	0	**(P)**

May be inoperative provided:

a. At least one flight data recorder (FDR) function operates normally.
b. Repairs are made within 8 flights or 72 hours, which occurs first.

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31-31-01 Digital Voice-Data Recorder Systems

31-31-01-02 Flight Data Recorder (FDR) Functions

31-31-01-02A One Inoperative

Interval	Installed	Required	Procedure
C	2	1	**(P)**

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31-31-01 Digital Voice-Data Recorder Systems
31-31-01-02 Flight Data Recorder (FDR) Functions

31-31-01-02B **Both Inoperative**

Interval	Installed	Required	Procedure
A	2	0	**(P) (MV)**

May be inoperative provided:

a. At least one cockpit voice recorder (CVR) function operates normally.
b. At least one datalink recorder (DLR) function operates normally.
c. Airplane is not dispatched from a designated airport as listed in the THAI MEL unless:
    1) The FDR failure occurs after pushback but prior to takeoff, or
d. In those cases where repair is attempted but not successful, the airplane may be dispatched on a flight or a series of flights until the next designated airport where repair must be accomplished prior to dispatch.
e. Repairs are made within 8 flights or 72 hours, which occurs first.

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31-31-01 Digital Voice-Data Recorder Systems

31-31-01-03 Datalink Recorder (DLR) Functions

31-31-01-03A One Inoperative

Interval	Installed	Required	Procedure
C	2	1	**(P)**

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31-31-01 **Digital Voice-Data Recorder Systems**
31-31-01-03 **Datalink Recorder (DLR) Functions**

31-31-01-03B **Both Inoperative**

Interval	Installed	Required	Procedure
A	2	0	**(P)**

May be inoperative provided:

a. At least one flight data recorder (FDR) function operates normally.
b. Repairs are made within three flight days.

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31-31-01 Digital Voice-Data Recorder Systems

31-31-01-04 Recorder Independent Power Supply

Interval	Installed	Required	Procedure
C	1	0	**(P)**

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31-33-01 Flight Deck Printer

31-33-01B Procedures Do Not Require Use

Interval	Installed	Required	Procedure
D	1	0	**(P)**

May be inoperative provided:

a. Procedures do not require its use.

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MAINTENANCE NOTE

1. If desired, the printer can be deactivated by opening the circuit breaker PRINTER-FLT DK and locking with an INOP tag.

31-33-01 Flight Deck Printer

31-33-01-01 Miscellaneous Features

Interval	Installed	Required	Procedure
D	–	–	**(P)**

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MAINTENANCE NOTE

1. Miscellaneous features refers to those features, which when inoperative, do not affect the printer's primary functions. The paper cutter would be an example of a miscellaneous feature.

31-51-01 Master WARNING Lights

Interval	Installed	Required	Procedure
C	2	1	**(P)**

One may be inoperative provided:
a. Both flight deck speaker systems operate normally.

31-51-02 Master CAUTION Lights

Interval	Installed	Required	Procedure
C	2	1	**(P)**

One may be inoperative provided:

a. Both flight deck speaker systems operate normally.

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31-51-03 Autopilot Disconnect Warning Function

Interval	Installed	Required	Procedure
B	1	0	**(O) (P) (MV)**

May be inoperative provided:

a. Autopilot is not used.
b. Approach minimums do not require use of the autopilot.
c. Number of flight segments and segment duration is acceptable to flight crew.
d. Enroute operations do not require use of the autopilot.

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OPERATIONS (O)

Note: Flight directors may be used.

1. Do not use the autopilot.
2. Approach minimums must not require autopilot use.
3. Enroute operations must not require autopilot use.

31-51-04 Nose Gear Pressure Transducer System

Interval	Installed	Required	Procedure
C	1	0	**(O) (P)**

May be inoperative provided:

a. Stabilizer trim position is verified to be properly set before each departure.

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OPERATIONS(O)

Verify the stabilizer trim position is correct for the takeoff thrust, takeoff flaps, gross weight, and center of gravity before each departure.

Note: The STAB GREENBAND advisory message may be displayed.

1. Confirm the FMC takeoff data has been correctly initialized (takeoff thrust, takeoff flaps, gross weight, and center of gravity).
2. Confirm the stabilizer trim is properly set to the position computed for the takeoff thrust, takeoff flaps, gross weight, and center of gravity.

31-61-01 Display Units (DU)

31-61-01-01 Lower DU

Interval	Installed	Required	Procedure
C	1	0	**(P)**

May be inoperative provided:

a. EFIS/DSP panels operate normally.
b. Remaining display units operate normally.

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MAINTENANCE NOTE

1. The five display units are interchangeable.

31-61-01 **Display Units (DU)**

31-61-01-02 **Left Inboard DU**

Interval	Installed	Required	Procedure
B	1	0	**(M) (P)**

May be inoperative provided:
a. Right PFD/MFD selector is verified to operate normally.
b. ISFD operates normally.
c. Touchpad cursor control devices (CCDs) operate normally.
d. EFIS/DSP panels operate normally.
e. Multifunction keypads (MFKs) operate normally.
f. Remaining display units operate normally.

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MAINTENANCE (M)

Note: 1. For DISPLAY UNIT INTERFACE status message displayed, the airplane must also be dispatched using MEL Item 31-61-02-02.
2. The five display units are interchangeable.

Verify the right PFD/MFD selector operates normally (AMM DDG 31-61-01).

1. Confirm that all positions of the right PFD/MFD selector operate normally.
   A. Confirm that the NORM position operates normally:
      1) Set the right PFD/MFD selector to NORM.
      2) Confirm the right outboard display unit displays the PFD and the inboard display unit displays the MFD/EICAS format.
   B. Confirm that the INBD position operates normally:
      1) Set the right PFD/MFD selector to INBD.
      2) Confirm the right inboard display unit displays the PFD/EICAS format and the outboard display unit blanks.
   C. Confirm that the OUTBD position operates normally:
      1) Set right PFD/MFD selector to OUTBD.
      2) Confirm the right outboard display unit displays the PFD/EICAS format and the inboard display blanks.
   D. Set right PFD/MFD selector to NORM.

OPERATIONS NOTE

1. In the event of failure of additional display units, Head-Up Display (HUD) may be used to provide PFD information.

31-61-01 Display Units (DU)

31-61-01-03 Left Outboard DU

Interval	Installed	Required	Procedure
B	1	0	**(M) (P)**

May be inoperative provided:

a. Right PFD/MFD selector is verified to operate normally.
b. ISFD operates normally.
c. Touchpad cursor control devices (CCDs) operate normally.
d. EFIS/DSP panels operate normally.
e. Multifunction keypads (MFKs) operate normally.
f. Remaining display units operate normally.

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MAINTENANCE (M)

Note: 1. For DISPLAY UNIT INTERFACE status message displayed, the airplane must also be dispatched using MEL Item 31-61-02-02.
2. The five display units are interchangeable.

Verify right PFD/MFD selector operates normally (AMM DDG 31-61-01).

1. Confirm that all positions of the right PFD/MFD selector operate normally.
   A. Confirm that the NORM position operates normally:
      1) Set the right PFD/MFD selector to NORM.
      2) Confirm the right outboard display unit displays the PFD and the inboard display unit displays the MFD/EICAS or MFD/MFD format.
   B. Confirm that the INBD position operates normally:
      1) Set the right PFD/MFD selector to INBD.
      2) Confirm the right inboard display unit displays the PFD/EICAS or PFD/MFD format and the outboard display unit blanks.
   C. Confirm that the OUTBD position operates normally:
      1) Set right PFD/MFD selector to OUTBD.
      2) Confirm the right outboard display unit displays the PFD/MFD format and the inboard display blanks.
   D. Set right PFD/MFD selector to NORM.

OPERATIONS NOTE

1. In the event of failure of additional display units, Head-Up Display (HUD) may be used to provide PFD information.

31-61-01 Display Units (DU)

31-61-01-04 Display Unit Brightness/Contrast Controls

Interval	Installed	Required	Procedure
C	5	0	**(P)**

May be inoperative provided:

a. Master brightness control system operates normally.

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31-61-02 Graphics Generator Systems

31-61-02-01 Graphics Generator Modules (GGMs)

Interval	Installed	Required	Procedure
C	4	3	**(P)**

OPERATIONS NOTE

1. Only one head-up display (HUD) will function. The HUD SNGL OPERATION advisory message will be displayed.
2. Failure of a display unit may restore dual HUD capability.
3. When single HUD combiner is moved to the down position, momentary blanking may occur on some or all head down displays.

31-61-02 Graphics Generator Systems

31-61-02-02 Display Unit Interface

Interval	Installed	Required	Procedure
B	1	0	**(M) (P)**

May be dispatched with DISPLAY UNIT INTERFACE faults provided:
a. Right PFD/MFD selector is verified to operate normally.
b. Graphics generator modules operate normally.

MAINTENANCE (M)

Verify the right PFD/MFD selector operates normally (AMM DDG 31-61-02).

1. Confirm that all positions of the right PFD/MFD selector operate normally.
   A. Confirm that the NORM position operates normally:
      1) Set right PFD/MFD selector to NORM.
      2) Confirm the right outboard display unit displays the PFD and the inboard display unit displays the MFD/EICAS or MFD/MFD format.
   B. Confirm that the INBD position operates normally:
      1) Set right PFD/MFD selector to INBD.
      2) Confirm the right inboard display unit displays the PFD/EICAS or PFD/MFD format and the outboard display unit blanks.
   C. Confirm that the OUTBD position operates normally:
      1) Set right PFD/MFD selector to OUTBD.
      2) Confirm the right outboard display unit displays the PFD/EICAS or PFD/MFD format and the inboard display unit blanks.
   D. Return right PFD/MFD selector to NORM.

OPERATIONS NOTE

1. Display system has lost redundancy but will operate normally.

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31-61-03 Touchpad Cursor Control Devices (CCD)

Interval	Installed	Required	Procedure
C	2	1	**(P)**

One may be inoperative provided:
a. EFIS/DSP panels operate normally.
b. Multifunction keypads (MFKs) operate normally.

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OPERATIONS NOTE

1. Use the multifunction keypad rotary CURSOR CONTROL selector as necessary. Cursor location switches may be inoperative. Selection of any new multifunction display format will cause the cursor to automatically move to that format. To move the cursor to an already displayed format, select a different format, then reselect the original format.
2. EFB cursor control may not be available to the affected pilot. EFB touchscreen and/or line select keys must be used.
3. The navigation display pick waypoint function will be inoperative for the affected pilot.
4. Partial control stand panel lighting may be inoperative. Use area floodlights if necessary for panel lighting during night operations.
    A. For left touchpad CCD inoperative:
        1) Parking brake / altn pitch trim, speedbrake / stab cutout, and thrust control module lighting may be inoperative.
    B. For right touchpad CCD inoperative:
        1) Flap lever module and altn flap module lighting may be inoperative.

31-61-03 Touchpad Cursor Control Devices (CCD)

31-61-03-01 Cursor Location Lights

Interval	Installed	Required	Procedure
C	8	0	**(P)**

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31-61-03 Touchpad Cursor Control Devices (CCD)

31-61-03-02 EFB, L, R, LWR Switch Lights

Interval	Installed	Required	Procedure
C	8	0	**(P)**

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UNCONTROLLED IF DOWNLOADED OR PRINTED

31-61-04 Multifunction Keypads (MFKs)

Interval	Installed	Required	Procedure
A	2	1	**(O) (P)**

One may be inoperative provided:

a. Display units operate normally.
b. Touchpad cursor control devices (CCDs) operate normally.
c. EFIS/DSP panels operate normally.
d. HDG-TRK SEL switch operates normally.
e. Tuning and control panels (TCPs) operate normally.
f. All switches on remaining keypad operate normally.
g. Repairs are made within two flight days.

OPERATIONS (O)

1. Pilot with inoperative keypad must use backup EFIS/DSP feature on an upper MFD to select lower display unit formats.
2. Pilot with operating keypad must make all alphanumeric entries (e.g., preflight data, changes to LNAV/VNAV flight plan, etc.).
3. In the event of enroute failure of the remaining keypad:
   A. Ability to change the LNAV/VNAV flight plan using alphanumeric inputs will be lost. If deviation from the LNAV/VNAV flight plan is required, use the navigation display pick waypoint function, route uplink if available, or other autopilot modes.
   B. Backup EFIS/DSP feature must be used to select lower display unit formats.
   C. Selection of any new multifunction display format will cause the cursor to automatically move to that format. To move the cursor to an already displayed format, select a different format, then reselect the original format.

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31-61-04 Multifunction Keypads (MFKs)

31-61-04-01 SYS, CDU, INFO, CHKL, COMM, ND Switches

Interval	Installed	Required	Procedure
C	12	6	**(P)**

May be inoperative provided:

a. All switches on opposite keypad operate normally.

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OPERATIONS NOTE

1. Use the EFIS/DSP backup feature in place of any inoperative switch.

UNCONTROLLED IF DOWNLOADED OR PRINTED

31-61-04 Multifunction Keypads (MFKs)

31-61-04-02 PREV PAGE, NEXT PAGE, EXEC Switches

Interval	Installed	Required	Procedure
C	6	3	**(P)**

May be inoperative provided:

a. All switches on opposite keypad operate normally.

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OPERATIONS NOTE

1. Use the touchpad cursor control device or the rotary CURSOR CONTROL selector on the keypad for flight management page access and control.

31-61-04 Multifunction Keypads (MFKs)

31-61-04-03 Rotary CURSOR CONTROL Selector

Interval	Installed	Required	Procedure
C	2	1	**(P)**

One may be inoperative provided:

a. All switches on opposite keypad operate normally.

b. Associated touchpad cursor control device (CCD) operates normally.

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OPERATIONS NOTE

1. Use the touchpad cursor control devices for all display control functions.

31-61-04 Multifunction Keypads (MFKs)

31-61-04-04 Switch Lights, Key Lights, EXEC Lights

Interval	Installed	Required	Procedure
C	106	0	**(P)**

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31-61-05 EFIS/DSP Panels

Interval	Installed	Required	Procedure
C	2	1	**(O) (P)**

One may be inoperative provided:

a. Touchpad cursor control devices (CCDs) operate normally.
b. Multifunction keypads (MFKs) operate normally.
c. Display units operate normally.

OPERATIONS (O)

1. Use the backup EFIS/DSP control keys on the SYS page.

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31-61-05 EFIS/DSP Panels

31-61-05-01 Display Lights

Interval	Installed	Required	Procedure
C	4	0	**(P)**

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31-61-05 EFIS/DSP Panels

31-61-05-02 Switch Lights

Interval	Installed	Required	Procedure
C	24	0	**(P)**

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31-61-06 PFD/MFD Selector Switches

31-61-06-01 OUTBD Position

Interval	Installed	Required	Procedure
C	2	1	**(M) (P)**

One may be inoperative provided:

a. Opposite switch is verified to operate normally.
b. Associated selector switch remains in NORM position.
c. Display units operate normally.

MAINTENANCE (M)

Verify that all positions of the opposite PFD/MFD selector operate normally (AMM DDG 31-61-06).

1. Confirm that the NORM position operates normally:
   A. Set the opposite PFD/MFD selector to NORM.
   B. Confirm the associated outboard display unit displays the PFD and the inboard display unit displays the MFD/MFD or MFD/EICAS format.
2. Confirm that the INBD position operates normally:
   A. Set the opposite PFD/MFD selector to INBD.
   B. Confirm the associated inboard display unit displays the PFD/MFD or PFD/EICAS format and the outboard display unit blanks.
3. Confirm that the OUTBD position operates normally:
   A. Set opposite PFD/MFD selector to OUTBD.
   B. Confirm the associated outboard display unit displays the PFD/MFD or PFD/EICAS format and the inboard display blanks.
4. Set opposite PFD/MFD selector to NORM.

31-61-06 PFD/MFD Selector Switches

31-61-06-02 INBD Position

Interval	Installed	Required	Procedure
C	2	1	**(M) (P)**

One may be inoperative provided:

a. Opposite switch is verified to operate normally.
b. Associated selector switch remains in NORM position.
c. Display units operate normally.

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MAINTENANCE (M)

Verify that all positions of the opposite PFD/MFD selector operate normally (AMM DDG 31-61-06).

1. Confirm that the NORM position operates normally:
   A. Set the opposite PFD/MFD selector to NORM.
   B. Confirm the associated outboard display unit displays the PFD and the inboard display unit displays the MFD/MFD or MFD/EICAS format.
2. Confirm that the INBD position operates normally:
   A. Set the opposite PFD/MFD selector to INBD.
   B. Confirm the associated inboard display unit displays the PFD/MFD or PFD/EICAS format and the outboard display unit blanks.
3. Confirm that the OUTBD position operates normally:
   A. Set opposite PFD/MFD selector to OUTBD.
   B. Confirm the associated outboard display unit displays the PFD/MFD or PFD/EICAS format and the inboard display blanks.
4. Set opposite PFD/MFD selector to NORM.

31-61-06 **PFD/MFD Selector Switches**

31-61-06-03 **Left NORM Position**

31-61-06-03A **Switch in OUTBD**

Interval	Installed	Required	Procedure
B	1	0	**(P)**

May be inoperative with associated selector switch in OUTBD position provided:
a. Left inboard display unit is considered inoperative.

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Note: The airplane must also be dispatched using MEL Item 31-61-01-02.

31-61-06 PFD/MFD Selector Switches
31-61-06-03 Left NORM Position
31-61-06-03B Switch in INBD

Interval	Installed	Required	Procedure
B	1	0	**(P)**

May be inoperative with associated selector switch in INBD position provided:

a. Left outboard display unit is considered inoperative.

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Note: The airplane must also be dispatched using MEL Item 31-61-01-03.

31-61-07 Instrument Source (AIR DATA/ATT) Selector Switches

31-61-07-01 ALTN Position

Interval	Installed	Required	Procedure
C	2	1	**(M) (P)**

One may be inoperative provided:

a. Opposite AIR DATA/ATT switch is verified to operate normally.
b. Associated selector switch remains in AUTO position.

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MAINTENANCE (M)

Verify opposite AIR DATA/ATT selector operates normally (AMM DDG 31-61-07).

1. Set AIR DATA/ATT selector to the ALTN position.
    - A. Confirm the appropriate ALTN ATTITUDE CAPT or ALTN ATTITUDE FO advisory message is displayed.
    - B. Confirm the SGL SOURCE ATTITUDE advisory message is not displayed.
    - C. Confirm that AOA SPD appears in amber below the associated PFD speed tape.
    - D. Confirm that GPS ALT appears in amber below the associated PFD altitude tape.
2. Set the AIR DATA/ATT selector to the AUTO position.
    - A. Confirm the advisory messages and PFD indications are no longer displayed.

31-61-08 Clock Switches

Interval	Installed	Required	Procedure
C	2	1	**(P)**

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31-61-09 Heading Reference (HDG REF) Switch

31-61-09-01 TRUE Function

Interval	Installed	Required	Procedure
C	1	0	**(O) (P) (MV)**

May be inoperative provided:

a. Enroute procedures do not require its use.

OPERATIONS (O)

1. Operation is not allowed on routes where true north referencing is required.

31-61-09 Heading Reference (HDG REF) Switch

31-61-09-02 **NORM Light**

Interval	Installed	Required	Procedure
C	1	0	**(P)**

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31-61-09 Heading Reference (HDG REF) Switch

31-61-09-03 TRUE Light

Interval	Installed	Required	Procedure
C	1	0	**(P)**

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31-61-10 Remote Light Sensor (RLS) System

Interval	Installed	Required	Procedure
C	1	0	**(P)**

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31-61-11 Electronic Checklist (ECL) System

Interval	Installed	Required	Procedure
C	1	0	**(M) (O) (P)**

May be inoperative provided:

a. Electronic checklist is deactivated.

b. Established suitable checklist procedures are used.

MAINTENANCE (M)

Note: No maintenance action is required if the CHECKLIST DISABLED or CHECKLIST NOT AVAILABLE message is displayed on an MFD.

Deactivate the electronic checklist (AMM DDG 31-61-11).

1. On the Miscellaneous Systems Control (MISC SYSTEM CTRLS) page, set the ELECTRONIC CHECKLIST box to DISABLE.

OPERATIONS (O)

1. Use the checklists from paper or iPad.

   Note: The rectangular icon symbol that precedes some alert messages will not be displayed.

31-61-11 Electronic Checklist (ECL) System

31-61-11-01 ECL Closed Loop Switch Indications

Interval	Installed	Required	Procedure
C	–	0	**(O) (P)**

May be inoperative provided:

a. ECL line item override procedures are used when required to complete checklists.

OPERATIONS (O)

1. Use the line item override (ITEM OVRD) key as required.

31-61-12 EICAS Status Messages

31-61-12A System Used

Interval	Installed	Required	Procedure
C	4	0	**(M) (P)**

May be inoperative provided:

a. Associated equipment is verified to operate normally before each departure.

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MAINTENANCE (M)

1. Verify the associated equipment operates normally before each flight.

   Note: There is no accepted procedure available for verifying the flight control system operates normally when any of the following status message is displayed:

   - FLIGHT CONTROL SYS
   - AILERON SYS
   - ELEC SPOILER SYS
   - ELEVATOR SYS
   - FLAPERON SYS
   - HYD SPOILER SYS
   - PILOT CONTROL SYS
   - RUDDER SYS
   - STABILIZER SYS

31-61-12 EICAS Status Messages

31-61-12B System Considered Inoperative

Interval	Installed	Required	Procedure
C	4	0	**(P)**

May be inoperative provided:

a. Associated equipment is considered inoperative.

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UNCONTROLLED IF DOWNLOADED OR PRINTED

31-61-13 Airport Map Function

31-61-13A Procedures Require Use

Interval	Installed	Required	Procedure
C	1	0	**(O) (P)**

May be inoperative or database may be out of currency.

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OPERATIONS (O)

Note: An amber SURF symbol may be displayed on one or both Navigation Displays (NDs).

1. Use backup data from paper or iPad.

31-61-13 Airport Map Function

31-61-13B Procedures Do Not Require Use

Interval	Installed	Required	Procedure
D	1	0	**(P)**

May be inoperative or database may be out of currency provided:

a. Procedures do not require its use.

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31-61-14 Head-Up Display (HUD) Systems

31-61-14B Procedures Do Not Require Use

Interval	Installed	Required	Procedure
D	2	0	**(P)**

May be inoperative provided:

a. Procedures do not require its use.

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31-61-14 Head-Up Display (HUD) Systems

31-61-14-01 Low Visibility Takeoff Function

31-61-14-01A Takeoff Minima Do Not Require Use

Interval	Installed	Required	Procedure
C	1	0	**(P)**

May be inoperative provided:

a. Takeoff minima do not require its use.

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UNCONTROLLED IF DOWNLOADED OR PRINTED

31-61-14 Head-Up Display (HUD) Systems
31-61-14-01 Low Visibility Takeoff Function
31-61-14-01B Procedures Do Not Require Use

Interval	Installed	Required	Procedure
D	1	0	**(P)**

May be inoperative provided:

a. Procedures do not require its use.

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31-61-14 Head-Up Display (HUD) Systems

31-61-14-02 De-Clutter Switches

Interval	Installed	Required	Procedure
C	2	0	**(P)**

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OPERATIONS NOTE

1. A change in roll mode to TO/GA or HUD TO/GA, or in pitch mode to TO/ GA will automatically trigger a HUD transition to the full-symbology mode. In other flight phases, a de-cluttered symbology mode may be reset to full- symbology mode by stowing and re-deploying the HUD combiner.

31-61-14 Head-Up Display (HUD) Systems

31-61-14-03 Brightness (BRT) Controls

Interval	Installed	Required	Procedure
C	2	0	**(P)**

May be inoperative and associated HUD used if acceptable to affected crew member.

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31-61-15 Display Panel Interface

Interval	Installed	Required	Procedure
C	1	0	**(P)**

May be dispatched with DISPLAY PANEL INTERFACE faults.

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OPERATIONS NOTE

1. Display system has lost redundancy but operates normally.

31-61-16 Displays Airplane Sequence Number Monitor

Interval	Installed	Required	Procedure
C	1	0	**(P)**

May be dispatched with DISPLAYS AP SEQ DISAGREE faults.

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31-61-17 Clock ELAPSED TIME Displays

Interval	Installed	Required	Procedure
C	2	1	**(P)**

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Table of Contents

ATA 32 **LANDING GEAR** ATA 32-1
Table Of Contents ATA 32-1
32-00-01 Landing Gear Synoptic Display ATA 32-4
32-08-01 Proximity Sensing System ATA 32-5
  32-08-01-01 Proximity Sensor Data Concentrator (PSDC) 1 ATA 32-5
  32-08-01-02 Proximity Sensor Data Concentrator (PSDC) 6 ATA 32-6
  32-08-01-03 PSDC 2, 3, 4, 5 Power Sources ATA 32-7
  32-08-01-04 PSDC 1, 6 Databuses ATA 32-8
  32-08-01-05 PSDC 2, 3, 4, 5 Databuses ATA 32-9
32-09-01 Air/Ground Sensors ATA 32-10
32-30-01 Landing Gear Actuation System ATA 32-11
32-31-01 Landing Gear Lever Lock Solenoid ATA 32-12
32-31-02 Landing Gear Control Relays ATA 32-13
  32-31-02-01 Landing Gear Control Reset Relays ATA 32-13
  32-31-02-02 Main Landing Gear Inhibit Relays ATA 32-14
  32-31-02-03 Nose Landing Gear Inhibit Relays ATA 32-17
32-31-03 Landing Gear Control Solenoids ATA 32-20
  32-31-03-01 Main Landing Gear Control Solenoids ATA 32-20
  32-31-03-02 Nose Landing Gear Control Solenoids ATA 32-24
32-31-04 Landing Gear Control Sensors ATA 32-27
  32-31-04-01 Main Landing Gear Control Sensors ATA 32-27
  32-31-04-02 Nose Landing Gear Control Sensors ATA 32-29
32-31-05 Landing Gear Control Lever Switches ATA 32-31
32-31-06 Landing Gear Door Safety Valve Indication Systems ATA 32-32
32-31-07 Landing Gear Bypass/Auto-Off Valve System ATA 32-33
  32-31-07-01 Nose Landing Gear ATA 32-33
    32-31-07-01-01 Pressure Transducer ATA 32-34
  32-31-07-02 Main Landing Gear ATA 32-36

32-31-07-02-01 Pressure Transducer . . . . . ATA 32-37
32-32-02 Main Gear Uplock Springs . . . . . ATA 32-39
32-32-03 Main Gear Side Brace Downlock Springs . . . . . ATA 32-40
32-35-01 Landing Gear Alternate Extend System . . . . . ATA 32-41
32-35-01A Landing Gear Not Secured Down . . . . . ATA 32-41
32-35-01B Landing Gear Secured Down . . . . . ATA 32-42
32-35-02 Ground Door Release Control System . . . . . ATA 32-43
32-35-02A Landing Gear Not Secured Down . . . . . ATA 32-43
32-35-02B Landing Gear Secured Down . . . . . ATA 32-44
32-42-01 Autobrake System . . . . . ATA 32-45
32-42-02 Antiskid Control Systems . . . . . ATA 32-46
32-44-01 Brake Status Lights (On Nose Gear) . . . . . ATA 32-47
32-44-01A Procedures Require Use . . . . . ATA 32-47
32-44-01B Procedures Do Not Require Its Use . . . . . ATA 32-48
32-45-01 Wheel Brake Systems . . . . . ATA 32-49
32-45-01-01 Electric Brake Actuator Systems . . . . . ATA 32-52
32-45-02 Wheel Tie Bolts . . . . . ATA 32-55
32-45-03 Nose Gear Spin Brake . . . . . ATA 32-56
32-46-01 Brake Temperature Monitor System (BTMS) . . . . . ATA 32-57
32-49-01 Tire Pressure Indication System (TPIS) . . . . . ATA 32-58
32-49-01-01 Nose Wheel TPIS . . . . . ATA 32-58
32-49-01-01A Procedures Require Use . . . . . ATA 32-58
32-49-01-01B Procedures Do Not Require Its Use . . . . . ATA 32-59
32-49-01-02 Main Wheel TPIS . . . . . ATA 32-60
32-49-01-02A Procedures Require Used . . . . . ATA 32-60
32-49-01-02B Procedures Do Not Require Its Use . . . . . ATA 32-61
32-51-01 Nose Wheel Steering . . . . . ATA 32-62
32-51-01-01 Nose Wheel Steering Channels . . . . . ATA 32-62

UNCONTROLLED IF DOWNLOADED OR PRINTED

32-51-01-02 **Rudder Pedal Steering Channels** ATA 32-63
32-51-02 **Nose Wheel Tillers** ATA 32-64
32-51-02-01 **Left Tiller** ATA 32-64
32-51-02-02 **Right Tiller** ATA 32-65
32-51-02-02A **Procedures Require Use** ATA 32-65
32-51-02-02B **Procedures Do Not Require Its Use** ATA 32-66
32-51-02-03 **Nose Wheel Tiller Channels** ATA 32-67
32-51-03 **Nose Wheel Steering Rudder Pedal Disconnect Switches** ATA 32-68
32-51-03A **In Disconnected Position** ATA 32-68
32-51-03B **In Connected Position** ATA 32-69
32-61-01 **Landing Gear Position Indication System** ATA 32-70
32-61-02 **Landing Gear Door Close Position Indication Sensors** ATA 32-71
32-61-03 **Main Landing Gear Uplock Position Indication Sensors** ATA 32-72
32-71-01 **Tail Strike Detector Channels** ATA 32-73
32-71-01-01 **One Inoperative** ATA 32-73
32-71-01-02 **Both Inoperative** ATA 32-74

32-00-01 Landing Gear Synoptic Display

Interval	Installed	Required	Procedure
C	1	0	**(P)**

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OPERATIONS NOTE

1. For missing data on the synoptic display, selecting an alternate location for the display (captain’s inboard, first officer’s inboard, or lower) may restore the missing data. Synoptic displays containing missing data may continue to be used to the extent remaining data is useful. Airplane system faults will be annunciated by alerting and status messages.

32-08-01 Proximity Sensing System

32-08-01-01 Proximity Sensor Data Concentrator (PSDC) 1

Interval	Installed	Required	Procedure
C	1	0	**(P)**

May be inoperative or have faults provided:
a. Associated equipment is considered inoperative.

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Note:

1. The door 1L flight attendant switch panel MANUAL indication and the manual mode indication for entry doors 1L, 1R, 2L and 2R will be inoperative. The airplane must also be dispatched using MEL Item 52-11-07-01.
2. The forward cargo door lift/latch system (electric mode) will be inoperative. The airplane must also be dispatched using MEL Item 52-34-01.
3. The forward cargo door control panel lights will be inoperative. The airplane must also be dispatched using MEL Item 52-34-02.
4. The door indication systems for the forward cargo door, forward access door, flight deck overhead door, forward electrical equipment access door, and entry doors 1L, 1R, 2L and 2R will be inoperative. The airplane must also be dispatched using MEL Item 52-71-01.

32-08-01 **Proximity Sensing System**

32-08-01-02 **Proximity Sensor Data Concentrator (PSDC) 6**

Interval	Installed	Required	Procedure
C	1	0	**(P)**

May be inoperative or have faults provided:

a. Associated equipment is considered inoperative.

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Note:

1. The door 1L flight attendant switch panel MANUAL indication and the manual mode indication for entry doors 3L, 3R, 4L and 4R will be inoperative. The airplane must also be dispatched using MEL Item 52-11-07-01.
2. The aft cargo door lift/latch system (electric mode) will be inoperative. The airplane must also be dispatched using MEL Item 52-35-01.
3. The aft cargo door control panel lights will be inoperative. The airplane must also be dispatched using MEL Item 52-35-02.
4. The door indication systems for the aft cargo door, aft electrical equipment access door, bulk cargo door, and entry doors 3L, 3R, 4L and 4R will be inoperative. The airplane must also be dispatched using MEL Item 52-71-01.

32-08-01 Proximity Sensing System

32-08-01-03 PSDC 2, 3, 4, 5 Power Sources

Interval	Installed	Required	Procedure
C	8	4	**(P)**

One power source for each PSDC may be inoperative.

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32-08-01 **Proximity Sensing System**

32-08-01-04 **PSDC 1, 6 Databuses**

Interval	Installed	Required	Procedure
C	4	2	**(P)**

One databus for each PSDC may be inoperative.

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32-08-01 Proximity Sensing System

32-08-01-05 PSDC 2, 3, 4, 5 Databuses

Interval	Installed	Required	Procedure
C	8	4	**(M) (P)**

One databus for each PSDC may be inoperative provided:

a. Each inoperative databus is verified to be connected to the remote data concentrator (RDC) in position 19.

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MAINTENANCE (M)

Verify that the inoperative databus on PSDC 2, PSDC 3, PSDC 4 and PSDC 5 is connected to RDC 19 (AMM DDG 32-08-01).

1. For an inoperative databus on PSDC 2, verify that the main and nose landing gear control sensors on SYS 1 are not all blank on LANDING GEAR CONTROL maintenance page 1.
2. For an inoperative databus on PSDC 3, verify that the main and nose landing gear indication sensors on SYS 2 are not all blank on the LNDG GEAR INDN AND STRNG maintenance page.
3. For an inoperative databus on PSDC 4, verify that the main and nose landing gear indication sensors on SYS 1 are not all blank on the LNDG GEAR INDN AND STRNG maintenance page.
4. For an inoperative databus on PSDC 5, verify that the main and nose landing gear control sensors on SYS 2 are not all blank on LANDING GEAR CONTROL maintenance page 1.

32-09-01 Air/Ground Sensors

Interval	Installed	Required	Procedure
C	8	4	**(M) (P)**

One tilt sensor on each main landing gear and one strut compression sensor on each main landing gear may be inoperative.

MAINTENANCE (M)

1. On the LNDG GEAR INDN AND STRNG maintenance page, verify that no more than one tilt sensor and one strut compression sensor are inoperative on each main landing gear (AMM DDG 32-09-01).

   Note: An inoperative TILT or STRT sensor will have an “x” in the status field.

32-30-01 Landing Gear Actuation System

Interval	Installed	Required	Procedure
C	1	0	**(M) (O) (P) (MV)**

May be inoperative provided:
a. Landing gear is secured in the down position.
b. Airplane is dispatched in accordance with Gear Down Dispatch data in Performance Dispatch (PD) chapter.

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MAINTENANCE (M)

Secure the landing gear in the down position (AMM DDG 32-30-01).

1. Install landing gear downlock pins (dispatch tool J32011) for airplane flight with landing gear locked in the extended position.
2. Using a flight deck multi-function display only, open the following circuit breakers and lock with an INOP tag:
   - MLG DOOR CTRL VLV OPEN-1
   - MLG DOOR CTRL VLV OPEN-2
   - LG LEVER LOCK
3. On the MISC SYSTEM CTRLS (MSC) maintenance page, set the Overspeed Warning Switch to GEAR DOWN.

OPERATIONS (O)

1. Airplane is dispatched in accordance with Gear Down Dispatch data in Performance Dispatch (PD) chapter.
2. Determine flight planning fuel adjustments by selecting Gear Down Dispatch in the Onboard Performance Tool (OPT).

   Note: The FMC does not support certain provisions for operations with the landing gear extended.
3. VMO GEAR DOWN memo message will be displayed.

32-31-01 Landing Gear Lever Lock Solenoid

Interval	Installed	Required	Procedure
C	1	0	**(O) (P)**

May be inoperative provided:

a. Solenoid is in the locked position.

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OPERATIONS (O)

1. For gear retraction:
   - A. Push and hold landing gear lever LOCK OVRD switch.
   - B. Set landing gear lever to UP.

32-31-02 Landing Gear Control Relays

32-31-02-01 Landing Gear Control Reset Relays

Interval	Installed	Required	Procedure
C	2	1	**(M) (P)**

One may be inoperative provided:
a. Inoperative relay is deactivated.
b. Opposite system channel is verified to operate normally.

MAINTENANCE (M)

Deactivate the inoperative landing gear control RESET RELAY and verify opposite system channel operates normally (AMM DDG 32-31-02).

1. Identify the inoperative RESET RELAY on LANDING GEAR CONTROL maintenance page 2. The inoperative RESET RELAY (SYS 1 or SYS 2) will have a blank status field.
2. Deactivate control relay.
   A. For an inoperative RESET RELAY on system 1, using a flight deck multi-function display only, open circuit breaker LG SYS-ENABLE 1 and lock with an INOP tag.
   B. For an inoperative RESET RELAY on system 2, using a flight deck multi-function display only, open circuit breaker LG SYS-ENABLE 2 and lock with an INOP tag.
3. Verify opposite system channel operates normally.
   A. Install landing gear downlock pins.
   B. Confirm the landing gear doors are closed and door safety valves are in STOW.
   C. Pressurize the center hydraulic system.
   D. Use the Central Maintenance Computing Function (CMCF) to start the SPECIAL FUNCTIONS: 32 Landing Gear Actuation System, Landing Gear Actuation Allow Normal Close.
   E. Set the landing gear control lever UP.
   F. Confirm the landing gear doors are open.
   G. Wait at least 10 seconds.
   H. Set the landing gear control lever DN.
   I. Confirm the landing gear doors close.
   J. Confirm the GEAR CONTROL SYS status message is not displayed.
   K. Press the STOP FUNCTION button on the CMCF SPECIAL FUNCTIONS screen: 32 Landing Gear Actuation System, Landing Gear Actuation Allow Normal Close.
   L. Depressurize the center hydraulic system.
   M. Remove landing gear downlock pins.

32-31-02 Landing Gear Control Relays

32-31-02-02 Main Landing Gear Inhibit Relays

Interval	Installed	Required	Procedure
C	6	3	**(M) (P)**

May be inoperative on one system channel provided:

a. Inoperative relay is deactivated.
b. Opposite system channel is verified to operate normally.

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Note: The airplane must also be dispatched using MEL Item 32-31-03-01.

MAINTENANCE (M)

Deactivate the inoperative landing gear control relay and verify opposite system channel operates normally (AMM DDG 32-31-02).

1. Identify the inoperative relay.
   A. Use the Central Maintenance Computing Function (CMCF) to start the SPECIAL FUNCTIONS: 32 Landing Gear Actuation System, Landing Gear Actuation Allow Normal Close.
   B. Identify the inoperative relay on LANDING GEAR CONTROL maintenance page 2. Inoperative control relays will have a blank status field. One main landing gear control relay of each type may be inoperative. All inoperative relays must be on the same system.
2. Deactivate control relay.
   A. For an inoperative BYPASS/DR CLOSE CMD INHIBIT RELAY on system 1, using a flight deck multi-function display only, open the following circuit breakers and lock with INOP tags.
      - MLG BYPASS VLV-ENABLE 1

        Note: Status message MLG BYPASS SOL will be displayed.
      - MLG DOOR CTRL VLV CLOSE-1

        Note: Status message MLG DOOR CLOSE SOL will be displayed.
   B. For an inoperative NORM DR CLOSE CMD INHIBIT RELAY on system 1, using a flight deck multi-function display only, open the following circuit breakers and lock with INOP tags.
      - MLG L DR SAFE VLV-NORM CLOSE 1

        Note: Status message MLG DOOR NORM CLOSE SOL L will be displayed.
      - MLG R DR SAFE VLV-NORM CLOSE 1

        Note: Status message MLG DOOR NORM CLOSE SOL R will be displayed.
   C. For an inoperative BYPASS/DR CLOSE CMD INHIBIT RELAY on system 2, using a flight deck multi-function display only, open the following circuit breakers and lock with INOP tags.
      - MLG BYPASS VLV-ENABLE 2

        Note: Status message MLG BYPASS SOL will be displayed.
      - MLG DOOR CTRL VLV CLOSE-2

        Note: Status message MLG DOOR CLOSE SOL will be displayed.

D. For an inoperative NORM DR CLOSE CMD INHIBIT RELAY on system 2, using a flight deck multi-function display only, open the following circuit breakers and lock with INOP tags.
   - MLG L DR SAFE VLV-NORM CLOSE 2

     Note: Status message MLG DOOR NORM CLOSE SOL L will be displayed.
   - MLG R DR SAFE VLV-NORM CLOSE 2

     Note: Status message MLG DOOR NORM CLOSE SOL R will be displayed.

E. For an inoperative GEAR CTRL CMD INHIBIT RELAY on system 1, using a flight deck multi-function display only, open the following circuit breakers and lock with INOP tags.
   - MLG CTRL VLV-DN1

     Note: Status message MLG DOWN SOL will be displayed.
   - MLG CTRL VLV-UP1

     Note: Status message MLG UP SOL will be displayed.

F. For an inoperative GEAR CTRL CMD INHIBIT RELAY on system 2, using a flight deck multi-function display only, open the following circuit breakers and lock with INOP tags.
   - MLG CTRL VLV-DN2

     Note: Status message MLG DOWN SOL will be displayed.
   - MLG CTRL VLV-UP2

     Note: Status message MLG UP SOL will be displayed.

3. Verify opposite system channel operates normally.

A, For an inoperative main landing gear BYPASS/DR CLOSE CMD INHIBIT RELAY:

1) Use the Central Maintenance Computing Function (CMCF) to start the SPECIAL FUNCTIONS: 32 Landing Gear Actuation System, Landing Gear Actuation Allow Normal Close.
2) Install landing gear downlock pins.
3) Confirm the landing gear doors are closed and door safety valves are in STOW.
4) Pressurize the center hydraulic system.
5) On the LNDG GEAR INDN AND STRN maintenance page, confirm that the pressure for MLG SYS is approximately the same pressure as the CENTER SYS.
6) Use the ground door release system to open the landing gear doors.
7) On the LNDG GEAR INDN AND STRN Maintenance page, confirm that the MLG SYS pressure decreases to less than 500 psi.
8) Set the landing gear control lever UP.
9) Confirm the landing gear doors are open.
10) Wait at least 10 seconds.
11) Set the landing gear control lever DN.
12) Confirm the landing gear doors close.
13) Confirm that GEAR CONTROL SYS status message is not displayed.
14) Press the STOP FUNCTION button on the CMCF SPECIAL FUNCTIONS screen: 32 Landing Gear Actuation System, Landing Gear Actuation Allow Normal Close.
15) Depressurize the center hydraulic system.
16) Remove landing gear downlock pins.

B. For an inoperative main landing gear NORM DR CLOSE CMD INHIBIT RELAY:
   1) Use the Central Maintenance Computing Function (CMCF) to start the SPECIAL FUNCTIONS: 32 Landing Gear Actuation System, Landing Gear Actuation Allow Normal Close.
   2) Install landing gear downlock pins.
   3) Confirm the landing gear doors are closed and door safety valves are in STOW.
   4) Pressurize the center hydraulic system.
   5) Use the ground door release system to open the landing gear doors.
   6) On the LNDG GEAR CONTROL Maintenance page 2, verify the remaining relay status shows INHIBIT in the status field.
   7) Set the landing gear control lever UP.
   8) Confirm the landing gear doors are open.
   9) Wait at least 10 seconds.
   10) Set the landing gear control lever DN.
   11) Confirm the landing gear doors close.
   12) On the LNDG GEAR CONTROL Maintenance page 2, verify the remaining relay status shows NOT INHIBIT in the status field.
   13) Confirm that GEAR CONTROL SYS status message is not displayed.
   14) Press the STOP FUNCTION button on the CMCF SPECIAL FUNCTIONS screen: 32 Landing Gear Actuation System, Landing Gear Actuation Allow Normal Close.
   15) Depressurize the center hydraulic system.
   16) Remove landing gear downlock pins.

C. For an inoperative main landing gear GEAR CTRL CMD INHIBIT RELAY:
   1) Use the Central Maintenance Computing Function (CMCF) to start the SPECIAL FUNCTIONS: 32 Landing Gear Actuation System, Landing Gear Actuation Allow Normal Close.
   2) Install landing gear downlock pins.
   3) Confirm the landing gear doors are closed and door safety valves are in STOW.
   4) Install four truck stow sensors slugs to NEAR.
   5) Pressurize the center hydraulic system.
   6) Set the landing gear control lever UP.
   7) Confirm the landing gear doors are open.
   8) On the LNDG GEAR CONTROL maintenance page, confirm remaining relay status display INHIBIT DN.
   9) Wait at least 10 seconds.
   10) Set the landing gear control lever DN.
   11) Confirm the landing gear doors close.
   12) On the LNDG GEAR CONTROL maintenance page, confirm remaining relay status display INHIBIT UP.
   13) Confirm that GEAR CONTROL SYS status message is not displayed.
   14) Press the STOP FUNCTION button on the CMCF SPECIAL FUNCTIONS screen: 32 Landing Gear Actuation System, Landing Gear Actuation Allow Normal Close.
   15) Depressurize the center hydraulic system.
   16) Remove the four truck stow sensor slugs.
   17) Remove landing gear downlock pins.

32-31-02 Landing Gear Control Relays

32-31-02-03 Nose Landing Gear Inhibit Relays

Interval	Installed	Required	Procedure
C	6	3	**(M) (P)**

May be inoperative on one system channel provided:
a. Inoperative relay is deactivated.
b. Opposite system channel is verified to operate normally.

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Note: The airplane must also be dispatched using MEL Item 32-31-03-02.

MAINTENANCE (M)

Deactivate the inoperative landing gear control relay and verify opposite system channel operates normally (AMM DDG 32-31-02).

1. Identify the inoperative relay.
   A. Use the Central Maintenance Computing Function (CMCF) to start the SPECIAL FUNCTIONS: 32 Landing Gear Actuation System, Landing Gear Actuation Allow Normal Close.
   B. Identify the inoperative relay on LANDING GEAR CONTROL maintenance page 2. Inoperative control relays will have a blank status field. One nose landing gear control relay of each type may be inoperative. All inoperative relays must be on the same system.
2. Deactivate control relay.
   A. For an inoperative BYPASS/DR CLOSE CMD INHIBIT RELAY on system 1, using a flight deck multi-function display only, open the following circuit breakers and lock with INOP tags.
      - NLG BYPASS VLV-ENABLE 1

        Note: Status message NLG BYPASS SOL will be displayed.
      - NLG DOOR CTRL VLV CLOSE-1

        Note: Status message NLG DOOR CLOSE SOL will be displayed.
   B. For an inoperative NORM DR CLOSE CMD INHIBIT RELAY on system 1, using a flight deck multi-function display only, open circuit breaker NLG DR SAFE VLV NORM CLOSE-1 and lock with INOP tag.

      Note: Status message NLG DOOR NORM CLOSE SOL will be displayed.
   C. For an inoperative BYPASS/DR CLOSE CMD INHIBIT RELAY on system 2, using a flight deck multi-function display only, open the following circuit breakers and lock with INOP tags.
      - NLG BYPASS VLV-ENABLE 2

        Note: Status message NLG BYPASS SOL will be displayed.
      - NLG DOOR CTRL VLV CLOSE-2

        Note: Status message NLG DOOR CLOSE SOL will be displayed.
   D. For an inoperative NORM DR CLOSE CMD INHIBIT RELAY on system 2, using a flight deck multi-function display only, open circuit breaker NLG DR SAFE VLV NORM CLOSE-2 and lock with INOP tag.

      Note: Status message NLG DOOR NORM CLOSE SOL will be displayed.

E. For an inoperative GEAR CTRL CMD INHIBIT RELAY on system 1, using a flight deck multi-function display only, open the following circuit breakers and lock with INOP tags.
   - NLG CTRL VLV-DN1

   Note: Status message NLG DOWN SOL will be displayed.
   - NLG CTRL VLV-UP1

   Note: Status message NLG UP SOL will be displayed.

F. For an inoperative GEAR CTRL CMD INHIBIT RELAY on system 2, using a flight deck multi-function display only, open the following circuit breakers and lock with INOP tags.
   - NLG CTRL VLV-DN2

   Note: Status message NLG DOWN SOL will be displayed.
   - NLG CTRL VLV-UP2

   Note: Status message NLG UP SOL will be displayed.

3. Verify opposite system channel operates normally.

A. For an inoperative nose landing gear BYPASS/DR CLOSE CMD INHIBIT RELAY:
   1) Use the Central Maintenance Computing Function (CMCF) to start the SPECIAL FUNCTIONS: 32 Landing Gear Actuation System, Landing Gear Actuation Allow Normal Close.
   2) Install landing gear downlock pins.
   3) Confirm the landing gear doors are closed and door safety valves are in STOW.
   4) Pressurize the center hydraulic system.
   5) On the LNDG GEAR INDN AND STRN maintenance page, confirm that the pressure for NLG SYS is approximately the same pressure as the CENTER SYS.
   6) Use the ground door release system to open the landing gear doors.
   7) On the LNDG GEAR INDN AND STRN maintenance page, confirm that the NLG SYS pressure decreases to less than 500 psi.
   8) Set the landing gear control lever UP.
   9) Confirm the landing gear doors are open.
   10) Wait at least 10 seconds.
   11) Set the landing gear control lever DN.
   12) Confirm the landing gear doors close.
   13) Confirm that GEAR CONTROL SYS status message is not displayed.
   14) Press the STOP FUNCTION button on the CMCF SPECIAL FUNCTIONS screen: 32 Landing Gear Actuation System, Landing Gear Actuation Allow Normal Close.
   15) Depressurize the center hydraulic system.
   16) Remove landing gear downlock pins.

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B. For an inoperative nose landing gear NORM DR CLOSE CMD INHIBIT RELAY:
  1) Use the Central Maintenance Computing Function (CMCF) to start the SPECIAL FUNCTIONS: 32 Landing Gear Actuation System, Landing Gear Actuation Allow Normal Close.
  2) Install landing gear downlock pins.
  3) Confirm the landing gear doors are closed and door safety valves are in STOW.
  4) Pressurize the center hydraulic system.
  5) Use the ground door release system to open the landing gear doors.
  6) On the LNDG GEAR CONTROL Maintenance page 2, verify the remaining relay status shows INHIBIT in the status field.
  7) Set the landing gear control lever UP.
  8) Confirm the landing gear doors are open.
  9) Wait at least 10 seconds.
  10) Set the landing gear control lever DN.
  11) Confirm the landing gear doors close.
  12) On the LNDG GEAR CONTROL Maintenance page 2, verify the remaining relay status shows NOT INHIBIT in the status field.
  13) Confirm that GEAR CONTROL SYS status message is not displayed.
  14) Press the STOP FUNCTION button on the CMCF SPECIAL FUNCTIONS screen: 32 Landing Gear Actuation System, Landing Gear Actuation Allow Normal Close.
  15) Depressurize the center hydraulic system.
  16) Remove landing gear downlock pins.

C. For an inoperative nose landing gear GEAR CTRL CMD INHIBIT RELAY:
  1) Use the Central Maintenance Computing Function (CMCF) to start the SPECIAL FUNCTIONS: 32 Landing Gear Actuation System, Landing Gear Actuation Allow Normal Close.
  2) Install landing gear downlock pins.
  3) Confirm the landing gear doors are closed and door safety valves are in STOW.
  4) Pressurize the center hydraulic system.
  5) Set the landing gear control lever UP.
  6) Confirm the landing gear doors are open.
  7) On the LNDG GEAR CONTROL maintenance page, confirm remaining relays status shows INHIBIT DN.
  8) Wait at least 10 seconds.
  9) Set the landing gear control lever DN.
  10) Confirm the landing gear doors close.
  11) On the LNDG GEAR CONTROL maintenance page, confirm remaining relays status shows INHIBIT UP.
  12) Confirm the GEAR CONTROL SYS status message is not displayed.
  13) Press the STOP FUNCTION button on the CMCF SPECIAL FUNCTIONS screen: 32 Landing Gear Actuation System, Landing Gear Actuation Allow Normal Close.
  14) Depressurize the center hydraulic system.
  15) Remove landing gear downlock pins.

32-31-03 Landing Gear Control Solenoids

32-31-03-01 Main Landing Gear Control Solenoids

Interval	Installed	Required	Procedure
C	18	9	**(M) (P)**

May be inoperative on one system channel provided:

a. Inoperative solenoid is deactivated.

b. Opposite system channel is verified to operate normally.

MAINTENANCE (M)

Deactivate the inoperative landing gear control solenoid and verify opposite system channel operates normally (AMM DDG 32-31-03).

1. Identify the inoperative solenoid on LANDING GEAR CONTROL maintenance page 2. Inoperative solenoids will have a blank display of the associated valve module. One main landing gear control solenoid of each type may be inoperative. All inoperative control solenoids must be on the same system.
2. To deactivate solenoid, using a flight deck multi-function display only, open the associated circuit breaker according to the table below and lock with an INOP tag:

System 1 Solenoid	Circuit Breaker
MLG BYPASS AUTO-OFF ENABLE	MLG BYPASS VLV-ENABLE 1
MLG DOOR CONTROL CLOSE	MLG DOOR CTRL VLV CLOSE-1
MLG DOOR SAFETY NORM CLS L	MLG L DR SAFE VLV-NORM CLOSE 1
MLG DOOR SAFETY NORM CLS R	MLG R DR SAFE VLV-NORM CLOSE 1
MLG DOOR CONTROL OPEN	MLG DOOR CTRL VLV OPEN-1
MLG GEAR CONTROL DOWN	MLG CTRL VLV-DN1
MLG GEAR CONTROL UP	MLG CTRL VLV-UP1
MLG TRUCK ACTUATOR TILT L	MLG L TILT1
MLG TRUCK ACTUATOR TILT R	MLG R TILT1

System 2 Solenoid	Circuit Breaker
MLG BYPASS AUTO-OFF ENABLE	MLG BYPASS VLV-ENABLE 2
MLG DOOR CONTROL CLOSE	MLG DOOR CTRL VLV CLOSE-2
MLG DOOR SAFETY NORM CLS L	MLG L DR SAFE VLV-NORM CLOSE 2
MLG DOOR SAFETY NORM CLS R	MLG R DR SAFE VLV-NORM CLOSE 2
MLG DOOR CONTROL OPEN	MLG DOOR CTRL VLV OPEN-2
MLG GEAR CONTROL DOWN	MLG CTRL VLV-DN2
MLG GEAR CONTROL UP	MLG CTRL VLV-UP2
MLG TRUCK ACTUATOR TILT L	MLG L TILT2
MLG TRUCK ACTUATOR TILT R	MLG R TILT2

3. Verify opposite system channel operates normally.
   A. For an inoperative MLG BYPASS AUTO-OFF ENABLE solenoid:
      1) Install landing gear downlock pins.
      2) Confirm the landing gear doors are closed and door safety valves are in STOW.
      3) Use the Central Maintenance Computing Function (CMCF) to start the Initiated/Ground Test: 32 Landing Gear Actuation System, Operational, Landing Gear Actuation Bypass Valve Off.
      4) Pressurize the center hydraulic system.
      5) Use the Central Maintenance Computing Function (CMCF) to start the SPECIAL FUNCTIONS: 32 Landing Gear Actuation System, Landing Gear Actuation Allow Normal Close.
      6) Set the landing gear control lever UP.
      7) Confirm the landing gear doors are open.
      8) Wait at least 10 seconds.
      9) Set the landing gear control lever DN.
      10) Confirm that GEAR CONTROL SYS status message is not displayed.
      11) Close the landing gear doors.
      12) Press the STOP FUNCTION button on the CMCF SPECIALFUNCTIONS screen: 32 Landing Gear Actuation System, Landing Gear Actuation Allow Normal Close.
      13) Depressurize the center hydraulic system.
      14) Remove landing gear downlock pins.
   B. For an inoperative MLG GEAR CONTROL UP or GEAR CONTROL DOWN solenoid:
      1) Install landing gear downlock pins.
      2) Confirm the landing gear doors are closed and door safety valves are in STOW.
      3) Pressurize the center hydraulic system.
      4) Use the Central Maintenance Computing Function (CMCF) to start the SPECIAL FUNCTIONS: 32 Landing Gear Actuation System, Landing Gear Actuation Allow Normal Close.
      5) Install actuator/deactuator part number A27092 on each TRK STOWED SENSOR for SYS 1 and SYS 2 on the left and right main landing gear.

         Note: To avoid sensor disagreement faults, apply the SYS 1 and SYS 2 sensor actuators within 2 seconds of each other for each truck.
      6) On the LANDING GEAR CONTROL maintenance page 1, confirm that the TRK STOWED SENSOR for SYS 1 and SYS 2 on the left and right main landing gear show NEAR in the status field.
      7) Set the landing gear control lever UP.
      8) Confirm the landing gear doors are open.
      9) Wait at least 10 seconds.
      10) Set the landing gear control lever DN.
      11) Confirm that GEAR CONTROL SYS status message is not displayed.

12) Remove actuator/deactuator part number A27092 from each TRK STOWED SENSOR on the left and right main landing gear.

    Note: To avoid sensor disagreement faults, remove the SYS 1 and SYS 2 sensor actuators within 2 seconds of each other for each truck.
13) Close the landing gear doors.
14) Press the STOP FUNCTION button on the CMCF SPECIALFUNCTIONS screen: 32 Landing Gear Actuation System, Landing Gear Actuation Allow Normal Close.
15) Depressurize the center hydraulic system.
16) Remove landing gear downlock pins.

C. For an inoperative MLG DOOR CONTROL CLOSE, DOOR CONTROL OPEN, TRUCK ACTUATOR TILT L, or TRUCK ACTUATOR TILT R solenoid:
1) Install landing gear downlock pins.
2) Confirm the landing gear doors are closed and door safety valves are in STOW.
3) Pressurize the center hydraulic system.
4) Use the Central Maintenance Computing Function (CMCF) to start the SPECIAL FUNCTIONS: 32 Landing Gear Actuation System, Landing Gear Actuation Allow Normal Close.
5) Set the landing gear control lever UP.
6) Confirm the landing gear doors are open.
7) Wait at least 10 seconds.
8) Set the landing gear control lever DN.
9) Confirm the GEAR CONTROL SYS status message is not displayed.
10) Confirm the landing gear doors close.
11) Press the STOP FUNCTION button on the CMCF SPECIALFUNCTIONS screen: 32 Landing Gear Actuation System, Landing Gear Actuation Allow Normal Close.
12) Depressurize the center hydraulic system.
13) Remove landing gear downlock pins.

D. For an inoperative MLG DOOR SAFETY NORM CLS L or DOOR SAFETY NORM CLS R solenoid:
1) Install landing gear downlock pins.
2) Confirm the landing gear doors are closed and door safety valves are in STOW.
3) Pressurize the center hydraulic system.
4) Use the Central Maintenance Computing Function (CMCF) to start the Initiated/Ground Test: 32 Landing Gear Actuation System, Operational, Landing Gear Actuation Bypass Valve Off.
5) On the LNDG GEAR INDN AND STRN Maintenance page, confirm that while the test runs, the MLG SYS and NLG SYS pressures drop below 500 psi for 10 seconds and then increase to the CENTER SYS pressure when the test is complete.
6) Use the Central Maintenance Computing Function (CMCF) to start the SPECIAL FUNCTIONS: 32 Landing Gear Actuation System, Landing Gear Actuation Allow Normal Close.
7) Set the landing gear control lever UP.
8) Confirm the landing gear doors are open.
9) Wait at least 10 seconds.

10) On the LANDING GEAR CONTROL maintenance page 2, confirm that the SYS 1 BYPASS/DR CLOSE CMD and SYS 2 BYPASS/ DR CLOSE CMD relays show NOT INHIBIT.
11) Set the landing gear control lever DN.
12) Confirm the landing gear doors close.
13) Confirm that GEAR CONTROL SYS status message is not displayed.
14) Press the STOP FUNCTION button on the CMCF SPECIAL FUNCTIONS screen: 32 Landing Gear Actuation System, Landing Gear Actuation Allow Normal Close.
15) Depressurize the center hydraulic system.
16) Remove landing gear downlock pins.

32-31-03 Landing Gear Control Solenoids

32-31-03-02 Nose Landing Gear Control Solenoids

Interval	Installed	Required	Procedure
C	12	6	**(M) (P)**

May be inoperative on one system channel provided:

a. Inoperative solenoid is deactivated.
b. Opposite system channel is verified to operate normally.

MAINTENANCE(M)

Deactivate the inoperative landing gear control solenoid and verify opposite system channel operates normally (AMM DDG 32-31-03).

1. Identify the inoperative solenoid on LANDING GEAR CONTROL maintenance page 2. Inoperative solenoids will have a blank display of the associated valve module. One nose landing gear control solenoid of each type may be inoperative. All inoperative control solenoids must be on the same system.
2. To deactivate solenoid, using a flight deck multi-function display only, open the associated circuit breaker according to the table below and lock with an INOP tag:

System 1 Solenoid	Circuit Breaker
NLG BYPASS AUTO-OFF ENABLE	NLG BYPASS VLV-ENABLE 1
NLG DOOR CONTROL CLOSE	NLG DOOR CTRL VLV CLOSE-1
NLG DOOR SAFETY NORM CLS	NLG DR SAFE VLV-NORM CLOSE 1
NLG DOOR CONTROL OPEN	NLG DOOR CTRL VLV OPEN-1
NLG GEAR CONTROL DOWN	NLG CTRL VLV-DN1
NLG GEAR CONTROL UP	NLG CTRL VLV-UP1

System 2 Solenoid	Circuit Breaker
NLG BYPASS AUTO-OFF ENABLE	NLG BYPASS VLV-ENABLE 2
NLG DOOR CONTROL CLOSE	NLG DOOR CTRL VLV CLOSE-2
NLG DOOR SAFETY NORM CLS	NLG DR SAFE VLV-NORM CLOSE 2
NLG DOOR CONTROL OPEN	NLG DOOR CTRL VLV OPEN-2
NLG GEAR CONTROL DOWN	NLG CTRL VLV-DN2
NLG GEAR CONTROL UP	NLG CTRL VLV-UP2

3. Verify opposite system channel operates normally.
   A. For an inoperative NLG BYPASS AUTO-OFF ENABLE solenoid:
      1) Install landing gear downlock pins.
      2) Confirm the landing gear doors are closed and door safety valves are in STOW.
      3) Use the Central Maintenance Computing Function (CMCF) to start the Initiated/Ground Test: 32 Landing Gear Actuation System, Operational, Landing Gear Actuation Bypass Valve Off.
      4) Pressurize the center hydraulic system.
      5) Use the Central Maintenance Computing Function (CMCF) to start the SPECIAL FUNCTIONS: 32 Landing Gear Actuation System, Landing Gear Actuation Allow Normal Close.
      6) Set the landing gear control lever UP.
      7) Confirm the landing gear doors are open.
      8) Wait at least 10 seconds.
      9) Set the landing gear control lever DN.
      10) Confirm that GEAR CONTROL SYS status message is not displayed.
      11) Close the landing gear doors.
      12) Press the STOP FUNCTION button on the CMCF SPECIAL FUNCTIONS screen: 32 Landing Gear Actuation System, Landing Gear Actuation Allow Normal Close.
      13) Depressurize the center hydraulic system.
      14) Remove landing gear downlock pins.
   B. For an inoperative NLG GEAR CONTROL UP, GEAR CONTROL DOWN, DOOR CONTROL CLOSE or DOOR CONTROL OPEN solenoid:
      1) Install landing gear downlock pins.
      2) Confirm the landing gear doors are closed and door safety valves are in STOW.
      3) Pressurize the center hydraulic system.
      4) Use the Central Maintenance Computing Function (CMCF) to start the SPECIAL FUNCTIONS: 32 Landing Gear Actuation System, Landing Gear Actuation Allow Normal Close.
      5) Set the landing gear control lever UP.
      6) Confirm the landing gear doors are open.
      7) Wait at least 10 seconds.
      8) Set the landing gear control lever DN.
      9) Close the landing gear doors.
      10) Confirm that GEAR CONTROL SYS status message is not displayed.
      11) Press the STOP FUNCTION button on the CMCF SPECIALFUNCTIONS screen: 32 Landing Gear Actuation System, Landing Gear Actuation Allow Normal Close.
      12) Depressurize the center hydraulic system.
      13) Remove landing gear downlock pins.

C. For an inoperative NLG DOOR SAFETY NORM CLS solenoid:

1) Install landing gear downlock pins.
2) Confirm the landing gear doors are closed and door safety valves are in STOW.
3) Pressurize the center hydraulic system.
4) Use the Central Maintenance Computing Function (CMCF) to start the Initiated/Ground Test: 32 Landing Gear Actuation System, Operational, Landing Gear Actuation Bypass Valve Off.
5) On the LNDG GEAR INDN AND STRN Maintenance page, confirm that while the test runs, the MLG SYS and NLG SYS pressures drop below 500 psi for 10 seconds and then increase to the CENTER SYS pressure when the test is complete.
6) Use the Central Maintenance Computing Function (CMCF) to start the SPECIAL FUNCTIONS: 32 Landing Gear Actuation System, Landing Gear Actuation Allow Normal Close.
7) Set the landing gear control lever UP.
8) Confirm the landing gear doors are open.
9) Wait at least 10 seconds.
10) On the LANDING GEAR CONTROL maintenance page 2, confirm that the SYS 1 BYPASS/DR CLOSE CMD and SYS 2 BYPASS/ DR CLOSE CMD relays show NOT INHIBIT.
11) Set the landing gear control lever DN.
12) Confirm the landing gear doors close.
13) Confirm the GEAR CONTROL SYS status message is not displayed.
14) Press the STOP FUNCTION button on the CMCF SPECIAL FUNCTIONS screen: 32 Landing Gear Actuation System, Landing Gear Actuation Allow Normal Close.
15) Depressurize the center hydraulic system.
16) Remove landing gear downlock pins.

32-31-04 Landing Gear Control Sensors

32-31-04-01 Main Landing Gear Control Sensors

Interval	Installed	Required	Procedure
C	16	15	**(M) (P)**

One may be inoperative deactivated.

MAINTENANCE (M)

Deactivate the inoperative main landing gear control sensor (AMM DDG 32-31-04).

1. For an inoperative MAIN GEAR DR OPEN SENSOR indicated by the MLG DOOR OPEN SNSR L or MLG DOOR OPEN SNSR R status message:
   A. Install landing gear downlock pins.
   B. Confirm the landing gear doors are closed and door safety valves are in STOW.
   C. Identify the inoperative control sensor on LANDING GEAR CONTROL maintenance page 1. The inoperative MAIN GEAR DR OPEN SENSOR L or R will show NEAR in the status field or have a blank status field.
   D. Open and deactivate the landing gear doors.
   E. Gain access to the inoperative control sensor.
   F. Disconnect, cap and stow the electrical connector for the inoperative sensor.
   G. On LANDING GEAR CONTROL maintenance page 1, confirm the remaining MAIN GEAR DR OPEN SENSOR for the associated gear shows NEAR in the status field.
   H. Pressurize the center hydraulic system.
   I. Close the landing gear doors.
   J. On LANDING GEAR CONTROL maintenance page 1, confirm the remaining MAIN GEAR DR OPEN SENSOR for the associated gear shows FAR in the status field.
   K. Remove landing gear downlock pins.
2. For an inoperative MAIN GEAR DOWN SENSOR indicated by the MLG DOWN SNSR L or MLG DOWN SNSR R status message:
   A. Install landing gear downlock pins.
   B. Identify the inoperative control sensor on LANDING GEAR CONTROL maintenance page 1. The inoperative MAIN GEAR DOWN SENSOR L or R will show FAR in the status field or have a blank status field.
   C. Gain access to the inoperative control sensor.
   D. Disconnect, cap and stow the electrical connector for the inoperative sensor.
   E. On LANDING GEAR CONTROL maintenance page 1, confirm the remaining MAIN GEAR DOWN SENSOR for the associated gear shows NEAR in the status field.
   F. Remove landing gear downlock pins.

3. For an inoperative sensor MAIN GEAR TRK STOWED SENSOR indicated by the MLG TRUCK STOW SNSR L or MLG TRUCK STOW SNSR R status message:
    A. Install landing gear downlock pins.
    B. Identify the inoperative control sensor on LANDING GEAR CONTROL maintenance page 1. The inoperative MAIN GEAR TRK STOWED SENSOR L or R will show NEAR in the status field or have a blank status field.
    C. Gain access to the inoperative control sensor.
    D. Disconnect, cap and stow the electrical connector for the inoperative sensor.
    E. On LANDING GEAR CONTROL maintenance page 1, confirm the remaining MAIN GEAR TRK STOWED SENSOR for the associated gear shows FAR in the status field.
    F. Remove landing gear downlock pins.
4. For an inoperative MAIN GEAR UP SENSOR indicated by the MLG UP SNSR L or MLG UP SNSR R status message:
    A. Install landing gear downlock pins.
    B. Open and deactivate the landing gear doors.
    C. Identify the inoperative control sensor on LANDING GEAR CONTROL maintenance page 1. The inoperative MAIN GEAR UP SENSOR L or R will show NEAR in the status field or have a blank status field.
    D. Gain access to the inoperative control sensor.
    E. Disconnect, cap and stow the electrical connector for the inoperative sensor.
    F. Identify the inoperative control sensor on LANDING GEAR CONTROL maintenance page 1. The inoperative MAIN GEAR UP SENSOR L or R will show NEAR in the status field or have a blank status field.
    G. Pressurize the center hydraulic system.
    H. Close the landing gear doors.
    I. Remove landing gear downlock pins.

32-31-04 Landing Gear Control Sensors

32-31-04-02 Nose Landing Gear Control Sensors

Interval	Installed	Required	Procedure
C	6	5	**(M) (P)**

One may be inoperative deactivated.

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MAINTENANCE (M)

Deactivate the inoperative nose landing gear control sensor (AMM DDG 32-31-04).

1. For an inoperative NOSE GEAR DR OPEN SENSOR indicated by the NLG DOOR OPEN SNSR status message:
   - A. Install landing gear downlock pins.
   - B. Confirm the landing gear doors are closed and door safety valves are in STOW.
   - C. Identify the inoperative control sensor on LANDING GEAR CONTROL maintenance page 1. The inoperative NOSE GEAR DR OPEN SENSOR will show NEAR in the status field or have a blank status field.
   - D. Open and deactivate the landing gear doors.
   - E. Gain access to the inoperative control sensor.
   - F. Disconnect, cap and stow the electrical connector for the inoperative sensor.
   - G. On LANDING GEAR CONTROL maintenance page 1, confirm the remaining NOSE GEAR DR OPEN SENSOR shows NEAR in the status field.
   - H. Pressurize the center hydraulic system.
   - I. Close the landing gear doors.
   - J. On LANDING GEAR CONTROL maintenance page 1, confirm the remaining NOSE GEAR DR OPEN SENSOR shows FAR in the status field.
   - K. Remove landing gear downlock pins.
2. For an inoperative NOSE GEAR DOWN SENSOR indicated by the NLG DOWN SNSR status message:
   - A. Install landing gear downlock pins.
   - B. Open and deactivate the landing gear doors.
   - C. Identify the inoperative control sensor on LANDING GEAR CONTROL maintenance page 1. An inoperative NOSE GEAR DOWN SENSOR will show FAR in the status field or have a blank status field.
   - D. Gain access to the inoperative control sensor.
   - E. Disconnect, cap and stow the electrical connector for the inoperative sensor.
   - F. On LANDING GEAR CONTROL maintenance page 1, confirm the remaining NOSE GEAR DOWN SENSOR shows NEAR in the status field.
   - G. Pressurize the center hydraulic system.
   - H. Close the landing gear doors.
   - I. Remove landing gear downlock pins.

3. For an inoperative NOSE GEAR UP SENSOR indicated by the NLG UP SNSR status message:
   A. Install landing gear downlock pins.
   B. Open and deactivate the landing gear doors.
   C. Identify the inoperative control sensor on LANDING GEAR CONTROL maintenance page 1. The inoperative NOSE GEAR UP SENSOR will show NEAR in the status field or have a blank status field.
   D. Gain access to the faulted control sensor.
   E. Disconnect, cap and stow the electrical connector for the inoperative sensor.
   F. On LANDING GEAR CONTROL maintenance page 1, confirm the remaining NOSE GEAR UP SENSOR shows FAR in the status field.
   G. Pressurize the center hydraulic system.
   H. Close the landing gear doors.
   I. Remove landing gear downlock pins.

32-31-05 Landing Gear Control Lever Switches

Interval	Installed	Required	Procedure
C	6	5	**(M) (P)**

One may be inoperative provided:

a. Remaining landing gear control lever switches are verified to operate normally.

MAINTENANCE (M)

Verify the remaining landing gear control switches operate normally (AMM DDG 32-31-05).

1. Install landing gear downlock pins.
2. Confirm the landing gear doors are closed and door safety valves are in STOW.
3. Pressurize the center hydraulic system.
4. Use the Central Maintenance Computing Function (CMCF) to start the SPECIAL FUNCTIONS: 32 Landing Gear Actuation System, Landing Gear Actuation Allow Normal Close.
5. Set the landing gear control lever UP.
6. Confirm the landing gear doors open.
7. After 6 seconds, set the landing gear control lever DN.
8. Confirm the landing gear doors close.
9. Confirm the GEAR CONTROL SYS status message is not displayed.
10. Press the STOP FUNCTION button on the CMCF SPECIAL FUNCTIONS screen: 32 Landing Gear Actuation System, Landing Gear Actuation Allow Normal Close.
11. Depressurize the center hydraulic system.
12. Remove landing gear downlock pins.

32-31-06 Landing Gear Door Safety Valve Indication Systems

Interval	Installed	Required	Procedure
C	3	0	**(M) (P)**

May be inoperative provided:

a. Associated landing gear door is verified to open and close normally.

b. Associated landing gear door safety valve is verified to be in the STOW position before each departure.

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MAINTENANCE (M)

Note: With the landing gear door safety valve indication system inoperative, the associated door UNSAFE light may not illuminate when the safety valve is in the STOW position.

Verify associated landing gear door opens and closes normally and verify that the associated landing gear door safety valve is in the STOW position prior to each departure (AMM DDG 32-31-06).

1. Verify associated landing gear door opens and closes normally.
   - A. Install landing gear downlock pins.
   - B. Confirm the landing gear doors are closed and door safety valves are in STOW.
   - C. Pressurize the center hydraulic system.
   - D. Use the Central Maintenance Computing Function (CMCF) to start the SPECIAL FUNCTIONS: 32 Landing Gear Actuation System, Landing Gear Actuation Allow Normal Close.
   - E. Set the landing gear control lever UP.
   - F. Confirm landing gear doors are open.
   - G. Wait at least 10 seconds.
   - H. Set the landing gear control lever DN.
   - I. Confirm landing gear doors close.
   - J. Press the STOP FUNCTION button on the CMCF SPECIAL FUNCTIONS screen: 32 Landing Gear Actuation System, Landing Gear Actuation Allow Normal Close.
   - K. Depressurize the center hydraulic system.
   - L. Remove landing gear downlock pins.
2. Verify that the associated landing gear door safety valve is in the STOW position prior to each departure.

32-31-07 Landing Gear Bypass/Auto-off Valve System

32-31-07-01 Nose Landing Gear

Interval	Installed	Required	Procedure
C	1	0	**(M) (O) (P) (MV)**

May be inoperative provided:

a. Landing gear is secured in the down position.

b. Airplane is dispatched in accordance with Gear Down Dispatch data in Performance Dispatch (PD) chapter.

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MAINTENANCE (M)

Secure the landing gear in the down position (AMM DDG 32-31-07).

1. Install landing gear downlock pins (dispatch tool J32011) for airplane flight with landing gear locked in the extended position.
2. Using a flight deck multi-function display only, open the following circuit breakers and lock with an INOP tag:
    - MLG DOOR CTRL VLV OPEN-1
    - MLG DOOR CTRL VLV OPEN-2
    - LG LEVER LOCK
3. On the MISC SYSTEM CTRLS (MSC) maintenance page, set the Overspeed Warning switch to GEAR DOWN.

OPERATIONS (O)

1. Airplane is dispatched in accordance with Gear Down Dispatch data in Performance Dispatch (PD) chapter.
2. Determine flight planning fuel adjustments by selecting Gear Down Dispatch in the Onboard Performance Tool (OPT).

   Note: The FMC does not support certain provisions for operations with the landing gear extended.
3. VMO GEAR DOWN memo message will be displayed.

32-31-07 **Landing Gear Bypass/Auto-off Valve System**
32-31-07-01 **Nose Landing Gear**

32-31-07-01-01 **Pressure Transducer**

Interval	Installed	Required	Procedure
C	1	0	**(M) (P)**

May be inoperative provided:

a. Nose landing gear bypass/auto-off valve pressure transducer is deactivated.
b. Nose landing gear bypass/auto-off valve is verified to operate normally.

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MAINTENANCE (M)

Deactivate the nose landing gear bypass/auto-off valve pressure transducer and verify that the nose landing gear bypass/auto-off valve is operating normally (AMM DDG 32-31-07).

1. Install landing gear downlock pins.
2. Using a flight deck multi-function display only, open circuit breaker NLG PRESS SNSR and lock with an INOP tag.
3. Gain access to the nose landing gear bypass/auto-off valve pressure transducer.
4. Disconnect, cap and stow the electrical connector for the nose landing gear bypass/auto-off valve pressure transducer.
5. Pressurize the center hydraulic system.
6. Confirm the landing gear doors are closed.
7. Use the Central Maintenance Computing Function (CMCF) to start the Initiated/Ground Test: 32 Landing Gear Actuation System, Operational, Landing Gear Actuation Bypass Valve Off.
8. When the test screen shows OPERATING, immediately set the landing gear lever UP.
9. Confirm the landing gear doors remain closed for at least 5 seconds.
10. When the test screen shows TEST COMPLETE, confirm the landing gear doors open.
11. Set the landing gear lever DN.
12. Close the landing gear doors.
13. Use the Central Maintenance Computing Function (CMCF) to start the SPECIAL FUNCTIONS: 32 Landing Gear Actuation System, Landing Gear Actuation Allow Normal Close.
14. Confirm the landing gear doors are closed and door safety valves are in STOW.
15. On the LNDG GEAR INDN AND STRN maintenance page, confirm that the pressure for MLG SYS is approximately the same pressure as the CENTER SYS.
16. Use the ground door release system to open the landing gear doors.
17. On the LNDG GEAR INDN AND STRN maintenance page, confirm that the MLG SYS pressure decreases to less than 500 psi.
18. Set the landing gear control lever UP.
19. Confirm the landing gear doors are open.
20. Wait at least 10 seconds.
21. Set the landing gear control lever DN.
22. Confirm the landing gear doors close.
23. Confirm the GEAR CONTROL SYS status message is not displayed.

24. Press the STOP FUNCTION button on the CMCF SPECIAL FUNCTIONS screen: 32 Landing Gear Actuation System, Landing Gear Actuation Allow Normal Close.
25. Depressurize the center hydraulic system.
26. Remove landing gear downlock pins.

32-31-07 Landing Gear Bypass/Auto-off Valve System

32-31-07-02 Main Landing Gear

Interval	Installed	Required	Procedure
C	1	0	**(M) (O) (P) (MV)**

May be inoperative provided:

a. Landing gear is secured in the down position.

b. Airplane is dispatched in accordance with Gear Down Dispatch data in Performance Dispatch (PD) chapter.

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Note: The auto speedbrake system will be inoperative. The airplane must also be dispatched using MEL Item 27-61-03.

MAINTENANCE (M)

Secure the landing gear in the down position (AMM DDG 32-31-07).

1. Install landing gear downlock pins (dispatch tool J32011) for airplane flight with landing gear locked in the extended position.
2. Using a flight deck multi-function display only, open the following circuit breakers and lock with an INOP tag:
   - MLG DOOR CTRL VLV OPEN-1
   - MLG DOOR CTRL VLV OPEN-2
   - LG LEVER LOCK

   Note: GEAR CONTROL SYS status message will be displayed. The airplane must also be dispatched using MEL item 32-30- 01.
3. On the MISC SYSTEM CTRLS (MSC) maintenance page, set the Overspeed Warning switch to GEAR DOWN.

OPERATIONS (O)

1. Airplane is dispatched in accordance with Gear Down Dispatch data in Performance Dispatch (PD) chapter.
2. Determine flight planning fuel adjustments by selecting Gear Down Dispatch in the Onboard Performance Tool (OPT).

   Note: The FMC does not support certain provisions for operations with the landing gear extended.
3. VMO GEAR DOWN memo message will be displayed.

32-31-07 Landing Gear Bypass/Auto-off Valve System
32-31-07-02 Main Landing Gear
32-31-07-02-01 Pressure Transducer

Interval	Installed	Required	Procedure
C	1	0	**(M) (P)**

May be inoperative provided:

a. Main landing gear bypass/auto-off valve pressure transducer is deactivated.
b. Main landing gear bypass/auto-off valve is verified to operate normally.

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Note: The auto speedbrake system will be inoperative. The airplane must also be dispatched using MEL Item 27-61-03.

MAINTENANCE (M)

Deactivate the main landing gear bypass/auto-off valve pressure transducer and verify that the main landing gear bypass/auto-off valve is operating normally (AMM DDG 32-31-07).

1. Install landing gear downlock pins.
2. Using a flight deck multi-function display only, open circuit breaker MLG PRESS SNSR and lock with an INOP tag.
3. Gain access to the main landing gear bypass/auto-off valve pressure transducer.
4. Disconnect, cap and stow the electrical connector for the main landing gear bypass/auto-off valve pressure transducer.
5. Pressurize the center hydraulic system.
6. Confirm the landing gear doors are closed.
7. Use the Central Maintenance Computing Function (CMCF) to start the Initiated/Ground Test: 32 Landing Gear Actuation System, Operational, Landing Gear Actuation Bypass Valve Off.
8. When the test screen shows OPERATING, immediately set the landing gear lever UP.
9. Confirm the landing gear doors remain closed for at least 5 seconds.
10. When the test screen shows TEST COMPLETE, confirm the landing gears door open.
11. Set the landing gear lever DN.
12. Close the landing gear doors.
13. Use the Central Maintenance Computing Function (CMCF) to start the SPECIAL FUNCTIONS: 32 Landing Gear Actuation System, Landing Gear Actuation Allow Normal Close.
14. Confirm the landing gear doors are closed and door safety valves are in STOW.
15. On the LNDG GEAR INDN AND STRN maintenance page, confirm that the pressure for NLG SYS is approximately the same pressure as the CENTER SYS.
16. Use the ground door release system to open the landing gear doors.
17. On the LNDG GEAR INDN AND STRN maintenance page, confirm that the NLG SYS pressure decreases to less than 500 psi.
18. Set the landing gear control lever UP.
19. Confirm the landing gear doors are open.

20. Wait at least 10 seconds.
21. Set the landing gear control lever DN.
22. Confirm the landing gear doors close.
23. Confirm the GEAR CONTROL SYS status message is not displayed.
24. Press the STOP FUNCTION button on the CMCF SPECIAL FUNCTIONS screen: 32 Landing Gear Actuation System, Landing Gear Actuation Allow Normal Close.
25. Depressurize the center hydraulic system.
26. Remove landing gear downlock pins.

32-32-02 Main Gear Uplock Springs

Interval	Installed	Required	Procedure
B	4	3	**(M) (O) (P)**

One spring on one main gear uplock mechanism may be missing provided:

a. The gear extend speed placard is not exceeded.

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MAINTENANCE (M)

1. Prepare the airplane for dispatch with one main gear uplock spring missing (AMM DDG 32-32-02).

OPERATIONS (O)

1. Retract landing gear as usual, but observe the landing gear extend speed placard.

32-32-03 Main Gear Side Brace Downlock Springs

Interval	Installed	Required	Procedure
B	8	6	**(P)**

One inner or one outer coil spring may be broken or missing from one downlock spring assembly on each main gear side brace.

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MAINTENANCE NOTE

Each main landing gear side brace includes two downlock spring assemblies. Each downlock spring assembly incorporates a nested pair of coil springs. Only one spring may be broken or missing on each side brace.

32-35-01 Landing Gear Alternate Extend System

32-35-01A Landing Gear Not Secured Down

Interval	Installed	Required	Procedure
C	1	0	**(M) (P)**

May be inoperative provided:

a. Landing gear doors are verified to open using the alternate extend system.
b. Landing gear control relays operate normally.
c. Landing gear control solenoids operate normally.
d. Landing gear control sensors operate normally.
e. Landing gear control lever switches operate normally.

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MAINTENANCE(M)

Verify the landing gear doors open using the alternate extend switch on the flight deck (AMM DDG 32-35-01).

1. Make sure the following circuit breakers located on the P300 panel are closed:
   - LG ALTN EXT MOTOR REMOTE
   - LG ALTN EXT CTRL
2. Install landing gear downlock pins.
3. Verify the nose and main landing gear doors open using the alternate extend system.
   A. Set Landing Gear Panel (P2-2) ALTN GEAR switch DOWN for 30 seconds.
   B. Confirm that all the landing gear doors open.
   C. If nose landing gear doors do not open, manually move the NLG doors to the open position by hand.
   Note: The NLG DOOR CLOSE SNSR status message may be displayed.
   D. Close the landing gear doors.
4. Remove landing gear downlock pins.

32-35-01 Landing Gear Alternate Extend System

32-35-01B Landing Gear Secured Down

Interval	Installed	Required	Procedure
C	1	0	**(M) (O) (P) (MV)**

May be inoperative provided:

a. Landing gear is secured in the down position.
b. Alternate extend system is deactivated.
c. Airplane is dispatched in accordance with Gear Down Dispatch data in Performance Dispatch (PD) chapter.

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MAINTENANCE (M)

Deactivate alternate extend system and secure the landing gear down (AMM DDG 32-35-01).

1. Install landing gear downlock pins (dispatch tool J32011) for airplane flight with landing gear locked in the extended position.
2. Using a flight deck multi-function display only, open the following circuit breakers and lock with an INOP tag:
   - MLG DOOR CTRL VLV OPEN-1
   - MLG DOOR CTRL VLV OPEN-2
   - LG LEVER LOCK
3. Deactivate the alternate extend system by opening and collaring the following circuit breakers located on the P300 panel:
   - LG ALTN EXT MOTOR REMOTE
   - LG ALTN EXT CTRL

   Note: The ALTN GEAR EXTEND status message will be displayed.
4. On the MISC SYSTEM CTRLS (MSC) maintenance page, set the Overspeed Warning switch to GEAR DOWN.

OPERATIONS (O)

1. Airplane is dispatched in accordance with Gear Down Dispatch data in Performance Dispatch (PD) chapter.
2. Determine flight planning information by selecting Gear Down Dispatch in the Onboard Performance Tool (OPT).

   Note: The FMC does not support certain provisions for operations with the landing gear extended.
3. VMO GEAR DOWN memo message will be displayed.

32-35-02 Ground Door Release Control System

32-35-02A Landing Gear Not Secured Down

Interval	Installed	Required	Procedure
C	1	0	**(M) (P)**

May be inoperative provided:
a. Both door open control switches are verified to be open.
b. Landing gear doors are verified to open using the alternate extend system.
c. Landing gear doors are verified to close using the ground door release closing function.

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MAINTENANCE (M)

Verify both door open control switches are open (not inoperative closed), the landing gear doors open using the alternate extend switch on the flight deck, and the landing gear doors close using the ground door release closing function (AMM DDG 32-35-02).

1. Make sure the following circuit breakers located on the P300 panel are closed:
    - LG ALTN EXT MOTOR REMOTE
    - LG ALTN EXT CTRL
2. Install landing gear downlock pins.
3. Verify both door open control switches are open (not inoperative closed).
    A. Ensure the Main Wheel Well Electric Service Panel (P56) ARM DOORS switch and ALL DOORS OPEN/MLG DOORS CLOSE switch are in the OFF position.
    B. Move the ARM DOORS switch to the ARM DOORS position for 30 seconds.
    C. Release the ARM DOORS switch to the OFF position.
    D. Confirm that none of the landing gear doors open.
    E. Move the ALL DOORS OPEN/MLG DOORS CLOSE switch in the ALL DOORS OPEN position for 30 seconds.
    F. Release the ALL DOORS OPEN/MLG DOORS CLOSE switch to the OFF position.
    G. Confirm that none of the landing gear doors open.
4. Verify the nose and main landing gear doors open using the alternate extend system and close using the ground door release closing function.
    A. Set Landing Gear Panel (P2-2) ALTN GEAR switch DOWN for 30 seconds.
    B. Confirm that all the landing gear doors open.
    C. If nose landing gear doors do not open, manually move the NLG doors to the open position by hand.

       Note: The NLG DOOR CLOSE SNSR status message may be displayed.
    D. Close the landing gear doors.
5. Remove landing gear downlock pins.

32-35-02 Ground Door Release Control System

32-35-02B Landing Gear Secured Down

Interval	Installed	Required	Procedure
C	1	0	**(M) (O) (P) (MV)**

May be inoperative provided:

a. Landing gear is secured in the down position.
b. Landing gear alternate extend system is deactivated.
c. Airplane is dispatched in accordance with Gear Down Dispatch data in Performance Dispatch (PD) chapter.

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MAINTENANCE (M)

Deactivate alternate extend system and secure the landing gear down (AMM DDG 32-35-02).

1. Install landing gear downlock pins (dispatch tool J32011) for airplane flight with landing gear locked in the extended position.
2. Using a flight deck multi-function display only, open the following circuit breakers and lock with an INOP tag:
   - MLG DOOR CTRL VLV OPEN-1
   - MLG DOOR CTRL VLV OPEN-2
   - LG LEVER LOCK
3. Deactivate the alternate extend system by opening and collaring the following circuit breakers located on the P300 panel:
   - LG ALTN EXT MOTOR REMOTE
   - LG ALTN EXT CTRL

   Note: The ALTN GEAR EXTEND status message will be displayed.
4. On the MISC SYSTEM CTRLS (MSC) maintenance page, set the Overspeed Warning switch to GEAR DOWN.

OPERATIONS (O)

1. Airplane is dispatched in accordance with Gear Down Dispatch data in Performance Dispatch (PD) chapter.
2. Determine flight planning information by selecting Gear Down Dispatch in the Onboard Performance Tool (OPT).

   Note: The FMC does not support certain provisions for operations with the landing gear extended.
3. VMO GEAR DOWN memo message will be displayed.

32-42-01 Autobrake System

Interval	Installed	Required	Procedure
C	1	0	**(P)**

May be inoperative provided:

a. Autobrake selector remains in the OFF position.

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32-42-02 Antiskid Control Systems

Interval	Installed	Required	Procedure
C	8	6	**(M) (O) (P) (MV)**

May be inoperative on one main landing gear wheel per truck provided:
a. Associated wheel brake is deactivated.
b. Brakes on remaining wheels on associated truck operate normally.
c. Electric brake actuators on remaining wheels on associated truck operate normally.
d. Use of flaps 20 for takeoff is prohibited.
e. The performance adjustments for brake deactivated are applied.
f. After takeoff, gear remains down for two minutes before retraction.

Note: In the event of engine failure after V1, retract landing gear after takeoff.

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MAINTENANCE (M)

Note: For dispatch with a missing main landing gear axle RDC, the associated axle RDC magnetic ring/flux link may also be broken or missing.

Deactivate affected wheel brake using MEL Item 32-45-01 (AMM DDG 32-42-02). For Safran (Messier-Bugatti-Dowty) brakes:

Note: Do not manually deactivate affected brake. Manual deactivation will result in ANTISKID message displaying.

OPERATIONS (O)

1. Increase flight planning fuel by 272 kg.
2. Use of flaps 20 for takeoff is prohibited.
3. Use takeoff and landing performance based on one or two brakes deactivated.
4. After takeoff, leave the landing gear extended for a minimum of two minutes to allow the wheels to spin down prior to gear retraction.
5. In case of engine failure after V1, landing gear should be retracted after takeoff.
6. It is not necessary to apply landing gear extended takeoff performance adjustments when dispatching under this item.

32-44-01 Brake Status Lights (On Nose Gear)

32-44-01A Procedures Require Use

Interval	Installed	Required	Procedure
C	3	0	**(O) (P)**

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OPERATIONS (O)

1. Use flight interphone for communications with ground crew to verify the status of the brakes.

32-44-01 Brake Status Lights (On Nose Gear)

32-44-01B Procedures Do Not Require Its Use

Interval	Installed	Required	Procedure
D	3	0	**(P)**

May be inoperative provided:

a. Procedures do not require their use.

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UNCONTROLLED IF DOWNLOADED OR PRINTED

32-45-01 Wheel Brake Systems

Interval	Installed	Required	Procedure
C	8	6	**(M) (O) (P) (MV)**

May be inoperative on one main landing gear wheel per truck provided:

a. Inoperative wheel brake is deactivated.
b. Electric brake actuator systems on remaining wheels on associated truck operate normally.
c. Use of flaps 20 for takeoff is prohibited.
d. The performance adjustments for brake deactivated are applied.
e. After takeoff, gear remains down for two minutes before retraction.

Note: In the event of engine failure after V1, retract landing gear after takeoff.

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MAINTENANCE (M)

Note: It is acceptable for the PARKINGBRAKE SET memo to not be displayed as long as the parking brake is verified to be operational. To verify that the parking brake is operational, verify in the 32 LANDING GEAR BRAKES maintenance page that the remaining active brakes display a brake clamping force of 25% or greater when the parking brake lever is latched up in the set position.

Deactivate the inoperative wheel brake (AMM DDG 32-45-01).

1. Chock the wheels.
2. Install landing gear downlock pins.
3. Deactivate inoperative wheel brake using one of the following two methods:

   Note: Inoperative electric brake actuators on affected wheel brake may be removed for dispatch.

   A. Use the CMCF Special Functions test to deactivate affected brake.
      1) Set parking brake.
      2) Do the appropriate test to deactivate the inoperative brake:
         - 32 Electric Brake Actuation Control, Wheel 1 Brake/EBA Deactivation
         - 32 Electric Brake Actuation Control, Wheel 2 Brake/EBA Deactivation
         - 32 Electric Brake Actuation Control, Wheel 3 Brake/EBA Deactivation
         - 32 Electric Brake Actuation Control, Wheel 4 Brake/EBA Deactivation
         - 32 Electric Brake Actuation Control, Wheel 5 Brake/EBA Deactivation
         - 32 Electric Brake Actuation Control, Wheel 6 Brake/EBA Deactivation
         - 32 Electric Brake Actuation Control, Wheel 7 Brake/EBA Deactivation
         - 32 Electric Brake Actuation Control, Wheel 8 Brake/EBA Deactivation
      3) Confirm the associated brake status on the LANDING GEAR BRAKES maintenance page indicates BRAKE DEAC.
      4) For the inoperative Safran (Messier-Bugatti-Dowty) brake, confirm the gap between the electric brake actuators and the brake pressure plate is a minimum of 0.07 in (1.8 mm). An electric brake actuator in contact with the brake pressure plate must be manually retracted or removed.

B. For an inoperative brake that cannot be deactivated using the CMCF Special Functions test, deactivate the brake by disconnecting, capping and stowing the electrical connector to the inoperative brake.

Note: BRAKE TEMP SYS may be displayed.

1) Release parking brake.
2) For brake on wheel 1 or 5:
    a. On the P500 panel, open and collar the EBPSU-C1-BSCU circuit breaker.
    b. On the P500 panel, open and collar the EBPSU-C1-EBAC circuit breaker.
    c. Disconnect, cap and stow the electrical connector for the inoperative brake.
    d. Install protective cap (dispatch tool number K32021) on the electrical connector receptacle.
    e. For the inoperative Safran (Messier-Bugatti-Dowty) brake, confirm the gap between the electric brake actuators and the brake pressure plate is a minimum of 0.07 in (1.8 mm). An electric brake actuator in contact with the brake pressure plate must be manually retracted or removed.
    f. On the P500 panel, close the EBPSU-C1-EBAC circuit breaker.
    g. On the P500 panel, close the EBPSU-C1-BSCU circuit breaker.
3) For brake on wheel 2 or 6:
    a. On the P500 panel, open and collar the EBPSU-L-BSCU circuit breaker.
    b. On the P500 panel, open and collar the EBPSU-L-EBAC circuit breaker.
    c. Disconnect, cap and stow the electrical connector for the inoperative brake.
    d. Install protective cap (dispatch tool number K32021) on the electrical connector receptacle.
    e. For the inoperative Safran (Messier-Bugatti-Dowty) brake, confirm the gap between the electric brake actuators and the brake pressure plate is a minimum of 0.07 in (1.8 mm). An electric brake actuator in contact with the brake pressure plate must be manually retracted or removed.
    f. On the P500 panel, close the EBPSU-L-EBAC circuit breaker.
    g. On the P500 panel, close the EBPSU-L-BSCU circuit breaker
4) For brake on wheel 3 or 7:
    a. On the P600 panel, open and collar the EBPSU-R-BSCU circuit breaker.
    b. On the P600 panel, open and collar the EBPSU-R-EBAC circuit breaker.
    c. Disconnect, cap and stow the electrical connector for the inoperative brake.
    d. Install protective cap (dispatch tool number K32021) on the electrical connector receptacle.
    e. For the inoperative Safran (Messier-Bugatti-Dowty) brake, confirm the gap between the electric brake actuators and the brake pressure plate is a minimum of 0.07 in (1.8 mm). An electric brake actuator in contact with the brake pressure plate must be manually retracted or removed.
    f. On the P600 panel, close the EBPSU-R-EBAC circuit breaker.
    g. On the P600 panel, close the EBPSU-R-BSCU circuit breaker.

    5) For brake on wheel 4 or 8:
        a. On the P600 panel, open and collar the EBPSU-C2-BSCU circuit breaker.
        b. On the P600 panel, open and collar the EBPSU-C2-EBAC circuit breaker.
        c. Disconnect, cap and stow the electrical connector for the inoperative brake.
        d. Install protective cap (dispatch tool number K32021) on the electrical connector receptacle.
        e. For the inoperative Safran (Messier-Bugatti-Dowty) brake, confirm the gap between the electric brake actuators and the brake pressure plate is a minimum of 0.07 in (1.8 mm). An electric brake actuator in contact with the brake pressure plate must be manually retracted or removed.
        f. On the P600 panel, close the EBPSU-C2-EBAC circuit breaker.
        g. On the P600 panel, close the EBPSU-C2-BSCU circuit breaker.
    6) The AUTOBRAKE status message will be displayed. The airplane must also be dispatched using MEL Item 32-42-01.
4. Remove landing gear downlock pins.

OPERATIONS (O)

1. Use of flaps 20 for takeoff is prohibited.
2. Increase flight planning fuel by 272 kg.
3. Use takeoff and landing performance based on one or two brakes deactivated.
4. After takeoff, leave the landing gear extended for a minimum of two minutes to allow the wheels to spin down prior to gear retraction.
5. In case of engine failure after V1, landing gear should be retracted after takeoff.
6. It is not necessary to apply landing gear extended takeoff performance adjustments when dispatching under this item.
7. For brakes deactivated using manual disconnect procedure, BRAKE TEMP SYS will display. Prior to dispatch, confirm temperatures for operating brakes are in an acceptable range.

32-45-01 Wheel Brake Systems

32-45-01-01 Electric Brake Actuator Systems

Interval	Installed	Required	Procedure
C	32	24	**(M) (O) (P) (MV)**

One per wheel may be inoperative provided:

a. Inoperative electric brake actuator is deactivated.
b. Remaining wheel brake systems on associated truck have not been deactivated.
c. The performance adjustments for electric brake actuator deactivated are applied.

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MAINTENANCE (M)

Deactivate the inoperative electric brake actuator (EBA) (AMM DDG 32-45-01).

1. Chock the wheels.
2. Install landing gear downlock pins.
3. Deactivate inoperative electric brake actuator using one of the following two methods:
   A. Use the CMCF Special Functions test to deactivate the inoperative EBA.
      1) Set parking brake.
      2) Do the appropriate test to deactivate the inoperative EBA:
         - 32 Electric Brake Actuation Control, Wheel 1 Brake/EBA Deactivation
         - 32 Electric Brake Actuation Control, Wheel 2 Brake/EBA Deactivation
         - 32 Electric Brake Actuation Control, Wheel 3 Brake/EBA Deactivation
         - 32 Electric Brake Actuation Control, Wheel 4 Brake/EBA Deactivation
         - 32 Electric Brake Actuation Control, Wheel 5 Brake/EBA Deactivation
         - 32 Electric Brake Actuation Control, Wheel 6 Brake/EBA Deactivation
         - 32 Electric Brake Actuation Control, Wheel 7 Brake/EBA Deactivation
         - 32 Electric Brake Actuation Control, Wheel 8 Brake/EBA Deactivation
      3) Confirm the associated EBA status on the LANDING GEAR BRAKES maintenance page indicates DEAC.
      4) For Safran (Messier-Bugatti-Dowty) brakes, confirm the gap between the inoperative electric brake actuators and the brake pressure plate is a minimum of 0.07 in (1.8 mm). An electric brake actuator in contact with the brake pressure plate must be manually retracted or removed. If the electric brake actuator is removed, the associated brake must be deactivated, and the airplane must be dispatched using MEL Item 32-45-01.

B. For an inoperative EBA that cannot be deactivated using the CMCF Special Functions test, deactivate the inoperative EBA by disconnecting, capping and stowing the electrical connector to the inoperative EBA.
  1) Release parking brake.
  2) For EBA on wheel 1 or 5:
    a. On the P500 panel, open and collar the EBPSU-C1-BSCU circuit breaker.
    b. On the P500 panel, open and collar the EBPSU-C1-EBAC circuit breaker.
    c. Disconnect, cap and stow the electrical connector for the inoperative EBA.
    d. Install protective cap (dispatch tool number K32021) on the electrical connector receptacle.
    e. For Safran (Messier-Bugatti-Dowty) brakes, confirm the gap between the inoperative electric brake actuators and the brake pressure plate is a minimum of 0.07 in (1.8 mm). An electric brake actuator in contact with the brake pressure plate must be manually retracted or removed. If the electric brake actuator is removed, the associated brake must be deactivated, and the airplane must be dispatched using MEL Item 32-45-01.
    f. On the P500 panel, close the EBPSU-C1-EBAC circuit breaker.
    g. On the P500 panel, close the EBPSU-C1-BSCU circuit breaker.
  3) For EBA on wheel 2 or 6:
    a. On the P500 panel, open and collar the EBPSU-L-BSCU circuit breaker.
    b. On the P500 panel, open and collar the EBPSU-L-EBAC circuit breaker.
    c. Disconnect, cap and stow the electrical connector for the inoperative EBA.
    d. Install protective cap (dispatch tool number K32021) on the electrical connector receptacle.
    e. For Safran (Messier-Bugatti-Dowty) brakes, confirm the gap between the inoperative electric brake actuators and the brake pressure plate is a minimum of 0.07 in (1.8 mm). An electric brake actuator in contact with the brake pressure plate must be manually retracted or removed. If the electric brake actuator is removed, the associated brake must be deactivated, and the airplane must be dispatched using MEL Item 32-45-01.
    f. On the P500 panel, close the EBPSU-L-EBAC circuit breaker.
    g. On the P500 panel, close the EBPSU-L-BSCU circuit breaker.
  4) For EBA on wheel 3 or 7:
    a. On the P600 panel, open and collar the EBPSU-R-BSCU circuit breaker.
    b. On the P600 panel, open and collar the EBPSU-R-EBAC circuit breaker.
    c. Disconnect, cap and stow the electrical connector for the inoperative EBA.
    d. Install protective cap (dispatch tool number K32021) on the electrical connector receptacle.
    e. For Safran (Messier-Bugatti-Dowty) brakes, confirm the gap between the inoperative electric brake actuators and the brake pressure plate is a minimum of 0.07 in (1.8 mm). An electric brake actuator in contact with the brake pressure plate must be manually retracted or removed. If the electric brake actuator is removed, the associated brake must be deactivated, and the airplane must be dispatched using MEL Item 32-45-01.
    f. On the P600 panel, close the EBPSU-R-EBAC circuit breaker.
    g. On the P600 panel, close the EBPSU-R-BSCU circuit breaker.

    5) For EBA on wheel 4 or 8:
        a. On the P600 panel, open and collar the EBPSU-C2-BSCU circuit breaker.
        b. On the P600 panel, open and collar the EBPSU-C2-EBAC circuit breaker.
        c. Disconnect, cap and stow the electrical connector for the inoperative EBA.
        d. Install protective cap (dispatch tool number K32021) on the electrical connector receptacle.
        e. For Safran (Messier-Bugatti-Dowty) brakes, confirm the gap between the inoperative electric brake actuators and the brake pressure plate is a minimum of 0.07 in (1.8 mm). An electric brake actuator in contact with the brake pressure plate must be manually retracted or removed. If the electric brake actuator is removed, the associated brake must be deactivated, and the airplane must be dispatched using MEL Item 32-45-01.
        f. On the P600 panel, close the EBPSU-C2-EBAC circuit breaker.
        g. On the P600 panel, close the EBPSU-C2-BSCU circuit breaker.
    6) Use the CMCF Special Functions test (step 3A) to deactivate affected EBA.
4. Remove landing gear downlock pins.

__**OPERATIONS (O)**__

Note: For one brake deactivated in combination with one or more EBAs deactivated, base performance on two brakes inoperative.

1. For one EBA deactivated:
    A. Base performance on one electric brake actuator inoperative.
2. For two to four EBAs deactivated:
    A. Base performance on one brake inoperative.
3. For five to eight EBAs deactivated:
    A. Base performance on two brakes inoperative.

32-45-02 Wheel Tie Bolts

Interval	Installed	Required	Procedure
A	168	–	**(M) (P)**

One per wheel may be broken or missing provided:

a. Affected wheel is checked for broken parts or damage, and replaced if broken parts or damage is found.
b. Associated brake is checked for broken parts or damage, and is replaced or deactivated if broken parts or damage is found.
c. Before each departure, wheel is inspected for additional broken or missing tie bolts.
d. Operations are limited to 5 flights before repairs are made.

MAINTENANCE (M)

Inspect the affected wheel and brake assemblies for broken parts or damage and before each departure inspect remaining tie bolts (AMM DDG 32-45-02).

1. For nose landing gear:
    A. Inspect the wheel for broken or missing parts or damage.
    B. If other bolts are broken, loose or missing, or if other areas of the wheel have been damaged, the affected wheel must be replaced.
2. For main landing gear:
    A. Deflate affected wheel to 40 psig or less.
    B. Remove each wheel with a broken, loose or missing tiebolt.
    C. Inspect the wheel for broken or missing parts or damage.
    D. If other bolts are broken, loose or missing, or if other areas of the wheel have been damaged, the affected wheel must be replaced.
    E. Inspect the brake for broken or missing parts or damage.
    F. Re-install the affected wheel.
    G. Inflate tire to correct pressure.
3. Before each departure:
    A. Inspect remaining tie bolts on the affected wheel (wheel removal not required) to ensure no other bolts are broken, loose or missing.

32-45-03 Nose Gear Spin Brake

Interval	Installed	Required	Procedure
C	2	0	**(O) (P) (MV)**

May be inoperative or missing provided:

a. Use of flaps 20 for takeoff is prohibited.

b. Gear remains down for two minutes before retraction after takeoff.

Note: In the event of engine failure after V1, retract landing gear after takeoff.

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OPERATIONS (O)

1. Increase flight planning fuel by 272 kg.
2. Use of flaps 20 for takeoff is prohibited.
3. After takeoff, leave the landing gear extended for a minimum of two minutes to allow the wheels to spin down prior to gear retraction.
4. In case of engine failure after V1, landing gear should be retracted after takeoff.
5. It is not necessary to apply landing gear extended takeoff performance adjustments when dispatching under this item.

32-46-01 Brake Temperature Monitor System (BTMS)

Interval	Installed	Required	Procedure
C	1	0	**(P) (MV)**

May be inoperative provided:

a. Maximum Quick Turnaround Weight limitations are observed.

Note: Any portion of the system which operates normally may be used.

MAINTENANCE NOTE

1. For dispatch with a missing main landing gear axle RDC, the associated axle RDC magnetic ring/flux link may also be broken or missing.

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32-49-01 Tire Pressure Indication System (TPIS)

32-49-01-01 Nose Wheel TPIS

32-49-01-01A Procedures Require Use

Interval	Installed	Required	Procedure
C	1	0	**(M) (P)**

May be inoperative provided:

a. Nose wheel TPIS is deactivated.

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MAINTENANCE (M)

Deactivate the inoperative nose wheel TPIS and use a tire pressure gauge to measure tire pressure (AMM DDG 32-49-01).

1. Deactivate the inoperative nose wheel TPIS.
    - A. Open the P600 panel circuit breaker EBPSU-C2-BSCU.
    - B. Open the P600 panel circuit breaker EBPSU-C2-EBAC.
    - C. Remove inoperative NLG axle RDC.
    - D. Install the NLG axle RDC connector cover from dispatch tool K32036 on the wire bundle plug.

      Note: An appropriate cap and stow procedure may be used in lieu of dispatch tool availability.
    - E. Close the P600 panel circuit breaker EBPSU-C2-EBAC.
    - F. Close the P600 panel circuit breaker EBPSU-C2-BSCU.
2. Use a tire pressure gauge to measure tire pressure.

32-49-01 **Tire Pressure Indication System (TPIS)**

32-49-01-01 **Nose Wheel TPIS**

32-49-01-01B **Procedures Do Not Require Its Use**

Interval	Installed	Required	Procedure
D	1	0	**(M) (P)**

May be inoperative provided:

a. Nose wheel TPIS is deactivated.
b. Procedures do not require its use.

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MAINTENANCE (M)

Deactivate the inoperative nose wheel TPIS (AMM DDG 32-49-01).

1. Open the P600 panel circuit breaker EBPSU-C2-BSCU.
2. Open the P600 panel circuit breaker EBPSU-C2-EBAC.
3. Remove inoperative NLG axle RDC.
4. Install the NLG axle RDC connector cover from dispatch tool K32036 on the wire bundle plug.
   Note: An appropriate cap and stow procedure may be used in lieu of dispatch tool availability.
5. Close the P600 panel circuit breaker EBPSU-C2-EBAC.
6. Close the P600 panel circuit breaker EBPSU-C2-BSCU.

32-49-01 Tire Pressure Indication System (TPIS)

32-49-01-02 Main Wheel TPIS

32-49-01-02A Procedures Require Used

Interval	Installed	Required	Procedure
C	1	0	**(M) (P)**

Note: Any portion of the system which operates normally may be used.

* * *

MAINTENANCE (M)

Note: For dispatch with a missing main landing gear axle RDC, the associated axle RDC magnetic ring/flux link may also be broken or missing.

1. Use a tire pressure gauge to measure tire pressure (AMM DDG 32-49-01).

32-49-01 **Tire Pressure Indication System (TPIS)**
32-49-01-02 **Main Wheel TPIS**

32-49-01-02B **Procedures Do Not Require Its Use**

Interval	Installed	Required	Procedure
D	1	0	**(P)**

May be inoperative provided:

a. Procedures do not require its use.

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MAINTENANCE NOTE

For dispatch with a missing main landing gear axle RDC, the associated axle RDC magnetic ring/flux link may also be broken or missing.

32-51-01 Nose Wheel Steering

32-51-01-01 Nose Wheel Steering Channels

Interval	Installed	Required	Procedure
C	2	1	**(M) (P) (MV)**

One may be inoperative deactivated.

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MAINTENANCE (M)

Deactivate the inoperative nose wheel steering channel (AMM DDG 32-51-01).

1. Identify the inoperative nose wheel steering channel on the LNDG GEAR INDN AND STRNG maintenance page. The inoperative channel (SYS 1 or SYS 2) will be indicated by a blank display or STBY displayed in the CHANNEL STATUS field.
2. For System 1 inoperative:
   A. Using a flight deck multi-function display only, open circuit breaker NOSE WHEEL STRG REU-PRI and lock with an INOP tag.
3. For System 2 inoperative:
   A. Using a flight deck multi-function display only, open circuit breaker NOSE WHEEL STRG REU-SEC and lock with an INOP tag.

OPERATIONS NOTE

1. The NOSE WHEEL STEERING CHAN status message will display when one Nose Wheel Steering Channel is inoperative.
2. The NOSE WHEEL STEERING advisory and status messages may be displayed when both engines are off, the center hydraulic system is unpressurized and either the NOSE WHEEL STRG REU-PRI or NOSE WHEEL STRG REU-SEC circuit breaker is open. The message will clear when the center hydraulic system is pressurized. If the message stays shown, dispatch is not permitted.

32-51-01 **Nose Wheel Steering**

32-51-01-02 **Rudder Pedal Steering Channels**

Interval	Installed	Required	Procedure
C	3	2	**(P)**

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32-51-02 Nose Wheel Tillers

32-51-02-01 Left Tiller

Interval	Installed	Required	Procedure
C	1	0	**(O) (P)**

May be inoperative provided:
a. Right tiller operates normally.

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OPERATIONS (O)

1. Use right tiller as required to steer airplane on ground.

32-51-02 Nose Wheel Tillers

32-51-02-02 Right Tiller

32-51-02-02A Procedures Require Use

Interval	Installed	Required	Procedure
C	1	0	**(O) (P)**

May be inoperative provided:

a. Left tiller operates normally.

* * *

OPERATIONS (O)

1. Use left tiller as required to steer airplane on ground.

32-51-02 Nose Wheel Tillers

32-51-02-02 Right Tiller

32-51-02-02B Procedures Do Not Require Its Use

Interval	Installed	Required	Procedure
D	1	0	**(P)**

May be inoperative provided:

a. Left tiller operates normally.
b. Procedures do not require its use.

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32-51-02 Nose Wheel Tillers

32-51-02-03 Nose Wheel Tiller Channels

Interval	Installed	Required	Procedure
C	6	4	**(P)**

One channel in each tiller may be inoperative.

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32-51-03 Nose Wheel Steering Rudder Pedal Disconnect Switches

32-51-03A In Disconnected Position

Interval	Installed	Required	Procedure
C	2	0	**(P)**

May be inoperative in disconnected position.

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32-51-03 Nose Wheel Steering Rudder Pedal Disconnect Switches

32-51-03B In Connected Position

Interval	Installed	Required	Procedure
C	2	1	**(P)**

One may be inoperative in connected position provided:

a. Remaining switch is used to disconnect nose wheel steering for rudder sweeps.

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32-61-01 Landing Gear Position Indication System

Interval	Installed	Required	Procedure
C	2	0	**(M) (O) (P) (MV)**

May be inoperative provided:

a. Landing gear is secured in the down position.

b. Airplane is dispatched in accordance with Gear Down Dispatch data in Performance Dispatch (PD) chapter.

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MAINTENANCE (M)

Secure the landing gear in the down position (AMM DDG 32-61-01).

1. Install landing gear downlock pins (dispatch tool J32011) for airplane flight with landing gear locked in the extended position.
2. Using a flight deck multi-function display only, open the following circuit breakers and lock with an INOP tag:
   - MLG DOOR CTRL VLV OPEN-1
   - MLG DOOR CTRL VLV OPEN-2
   - LG LEVER LOCK
3. On the MISC SYSTEM CTRLS (MSC) maintenance page, set the Overspeed Warning switch to GEAR DOWN.

OPERATIONS (O)

1. Airplane is dispatched in accordance with Gear Down Dispatch data in Performance Dispatch (PD) chapter.
2. Determine flight planning information by selecting Gear Down Dispatch in the Onboard Performance Tool (OPT).

   Note: The FMC does not support certain provisions for operations with the landing gear extended.
3. VMO GEAR DOWN memo message will be displayed.

32-61-02 Landing Gear Door Close Position Indication Sensors

Interval	Installed	Required	Procedure
C	6	3	**(M) (P)**

One on each landing gear may be inoperative deactivated.

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MAINTENANCE (M)

Deactivate the inoperative gear door close position indication sensor (AMM DDG 32-61-02).

1. Install landing gear downlock pins.
2. Make sure that the landing gear doors are closed.
3. Identify the inoperative position indication sensor on the LNDG GEAR INDN AND STRNG maintenance page. The inoperative DR CLOSED SENSOR (L, R or NOSE) will show FAR in the status field or have a blank status field.
4. Open and deactivate the landing gear doors.
5. Gain access to the inoperative indication sensor.
6. Disconnect, cap and stow the electrical connector for the inoperative sensor.
7. On the LNDG GEAR INDN AND STRNG maintenance page, confirm the remaining DR CLOSED SENSOR for the associated gear (L, R or NOSE) shows FAR in the status field.
8. Pressurize the center hydraulic system.
9. Close the landing gear doors.
10. On the LNDG GEAR INDN AND STRNG maintenance page, confirm the remaining DR CLOSED SENSOR for the associated gear (L, R or NOSE) shows NEAR in the status field.
11. Remove landing gear downlock pins.

32-61-03 Main Landing Gear Uplock Position Indication Sensors

Interval	Installed	Required	Procedure
C	4	2	**(M) (P)**

One on each main landing gear may be inoperative provided:

a. Inoperative sensor is deactivated.
b. Associated landing gear door close position indication sensors operate normally.

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MAINTENANCE (M)

Deactivate the inoperative main landing gear uplock position indication sensor (AMM DDG 32-61-3).

1. Install landing gear downlock pins.
2. Open and deactivate the landing gear doors.
3. Identify the inoperative control sensor on the LNDG GEAR INDN AND STRNG maintenance page. The inoperative MAIN GEAR UPLOCKED SENSOR L or R will show NEAR in the status field or have a blank status field.
4. Gain access to the inoperative indication sensor.
5. Disconnect, cap and stow the electrical connector for the inoperative sensor.
6. On the LNDG GEAR INDN AND STRNG maintenance page, confirm the remaining MAIN GEAR UPLOCKED SENSOR for the associated gear (L or R) shows FAR in the status field.
7. Remove landing gear downlock pins.

32-71-01 Tail Strike Detector Channels

32-71-01-01 One Inoperative

Interval	Installed	Required	Procedure
C	2	1	**(P)**

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32-71-01 Tail Strike Detector Channels

32-71-01-02 Both Inoperative

Interval	Installed	Required	Procedure
C	2	0	**(M) (O) (P)**

May be inoperative provided:

a. Tail section is visually inspected for damage before each departure.
b. Alternate tail strike detection procedures are established and used.
c. TAIL STRIKE caution message is disabled.

MAINTENANCE (M)

Before each departure, visually inspect the tail section of the aircraft for damage from a tail strike.

Disable the TAIL STRIKE caution message (AMM DDG 32-71-01).

1. Remove the Tail Strike Sensor (TSS).
2. Disconnect left RDC connector.
3. Fabricate a 4-6 inch long jumper using 22 gauge wire.
4. For 787-8: **TQA to TQF**
   A. Install the jumper wire between the ship side pins B and C.
5. For 787-9: **TWA to TWB**
   A. Install the jumper wire between the ship side pins A and B.
6. Verify the following EICAS messages:
   A. TAIL STRIKE caution is not displayed.
   B. TAIL STRIKE CHANNEL 1 status is not displayed.
   C. TAIL STRIKE CHANNEL 2 status is displayed.
7. Bag and stow the TSS connector. Cap the TSS receptacle.
8. Install the Tail Strike Sensor (TSS).

OPERATIONS (O)

Note: The TAIL STRIKE caution message is not available.

1. During takeoff and flare, flight crew and cabin crew should be alert for a potential tail strike. If a tail strike is perceived by the flight crew or reported from the cabin during takeoff, do the TAIL STRIKE Non-Normal Checklist.

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Table of Contents

ATA 33 LIGHTS

ATA 33 LIGHTS .... ATA 33-1
Table Of Contents .... ATA 33-1
33-11-01 Flight Compartment Illumination System .... ATA 33-3
33-11-01-01 STORM Switch ON Light .... ATA 33-4
33-13-01 Master Brightness Control System .... ATA 33-5
33-16-01 Master Auto And Test System .... ATA 33-6
33-21-01 Passenger Compartment Illumination System .... ATA 33-7
33-21-01-01 Airplanes without Photoluminescent Escape Path Lighting .... ATA 33-7
33-24-01 Passenger Information Signs .... ATA 33-8
33-24-01A PA System Operates Normally .... ATA 33-8
33-24-01B PA System Inoperative .... ATA 33-9
33-24-01C No Passengers Carried .... ATA 33-10
33-24-01-01 Flight Deck Automatic Function .... ATA 33-11
33-31-01 Main Wheel Well And Nose Wheel Well Service Area Lights .... ATA 33-12
33-31-01A All Operations .... ATA 33-12
33-31-01B Procedures Do Not Require Use of Service Lights .... ATA 33-13
33-37-01 Interior Cargo Lights .... ATA 33-14
33-37-02 Exterior Cargo Lights .... ATA 33-15
33-41-01 Wing Illumination Lights .... ATA 33-16
33-41-01-01 WING Switch ON Light .... ATA 33-17
33-42-01 Landing And Taxi Lights .... ATA 33-18
33-42-01A All Operations .... ATA 33-18
33-42-01B Day Operations .... ATA 33-19
33-42-02 Runway Turnoff Lights .... ATA 33-20
33-43-01 Position Lights .... ATA 33-21
33-43-01A All Operations .... ATA 33-21
33-43-01B Day Operations .... ATA 33-22
33-43-01-01 NAV Switch ON Light .... ATA 33-23

33-44-01 Anti-Collision Lights . . . . . ATA 33-24
33-44-01-01 Red Upper and Lower Fuselage Beacon Lights . . . . . ATA 33-24
33-44-01-01A All Operations . . . . . ATA 33-24
33-44-01-01B Day Operations . . . . . ATA 33-25
33-44-01-02 White Tail and Wing Tip Strobe Lights . . . . . ATA 33-26
33-44-01-02A All Operations . . . . . ATA 33-26
33-44-01-02B Day Operations . . . . . ATA 33-27
33-44-01-03 BEACON Switch ON Light . . . . . ATA 33-28
33-45-01 Logo Lights . . . . . ATA 33-29
33-45-01-01 LOGO Switch ON Light . . . . . ATA 33-30
33-49-01 Exterior Passenger Door Viewing Lights . . . . . ATA 33-31
33-51-01 Emergency Lights System . . . . . ATA 33-32
33-51-01 Emergency Lights System . . . . . ATA 33-33
33-51-01-01 Main-Aisle Overhead Emergency Lights . . . . . ATA 33-33
33-51-01-02 Cross-Aisle Overhead Emergency Lights . . . . . ATA 33-34
33-51-02 Floor Proximity Lighting Systems . . . . . ATA 33-35
33-51-02-01 Seat-Mounted Proximity Lights . . . . . ATA 33-36
33-51-02-02 Main-Aisle Monument Mounted Proximity Lights . . . . . ATA 33-37
33-51-02-03 Cross-Aisle Monument-mounted Proximity Lights . . . . . ATA 33-38
33-51-02-04 Exit Identifiers . . . . . ATA 33-39
33-51-02-04-01 Door 1 . . . . . ATA 33-39
33-51-02-04-02 Door 2 and Door 3 . . . . . ATA 33-40
33-51-02-04-03 Door 4 . . . . . ATA 33-41

33-11-01 Flight Compartment Illumination System

Interval	Installed	Required	Procedure
C	–	–	**(P)**

Individual lights may be inoperative provided:

a. Remaining lighting system lights are sufficient to clearly illuminate all required instruments, controls, and other devices for which they are provided.

b. Remaining lighting system lights are positioned so that direct rays are shielded from flight crew eyes.

c. Lighting configuration and intensity is acceptable to the flight crew.

Note: Individual button/switch lights and/or annunciations/indications are excluded from this relief.

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33-11-01 Flight Compartment Illumination System

33-11-01-01 STORM Switch ON Light

Interval	Installed	Required	Procedure
C	1	0	**(P)**

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33-13-01 Master Brightness Control System

Interval	Installed	Required	Procedure
C	1	0	**(P)**

May be inoperative provided:

a. Master brightness control switch remains off.

b. Display unit brightness/contrast controls operate normally.

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33-16-01 Master Auto and Test System

Interval	Installed	Required	Procedure
B	1	0	**(P)**

AUTO function may be inoperative provided:

a. TEST and BRT functions operate normally.
b. Light intensity and configuration is acceptable to the flight crew.

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33-21-01 Passenger Compartment Illumination System

33-21-01-01 Airplanes without Photoluminescent Escape Path Lighting

Interval	Installed	Required	Procedure
C	–	–	**(P)**

Individual lights may be inoperative provided:

a. Sufficient lighting remains for crew members to perform their duties.

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33-24-01 Passenger Information Signs

33-24-01A PA System Operates Normally

Interval	Installed	Required	Procedure
C	–	–	**(O) (P)**

May be inoperative provided:

a. PA system operates normally and can be clearly heard throughout the cabin during flight.

b. PA system is used to alert passengers when associated passenger lighted information sign is inoperative.

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OPERATIONS (O)

1. Use PA system to alert the cabin crew and to notify passengers when seat belts should be fastened, when smoking is prohibited, and when passengers should return to their seats.

33-24-01 Passenger Information Signs

33-24-01B PA System Inoperative

Interval	Installed	Required	Procedure
C	–	–	**(M) (P)**

May be inoperative provided:

a. Passenger seats from which a passenger lighted information sign is not readily legible are blocked and placarded DO NOT OCCUPY.

b. Lavatory with passenger lighted information sign not readily legible has entrance door locked closed and placarded, INOPERATIVE—PLEASE DO NOT USE.

Note: These conditions are not intended to prohibit lavatory use or inspections by crew members.

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MAINTENANCE (M)

If required, block and placard associated seats or lavatory (AMM DDG 33-24-01).

1. Install tapes or ropes of conspicuous contrasting colors to block access to unusable seats prior to boarding of passengers.
2. Place conspicuous signs or placards in appropriate locations to indicate seats which are not to be occupied by passengers or flight attendants.
3. For an associated lavatory, close and lock the lavatory door.

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33-24-01 **Passenger Information Signs**

33-24-01C **No Passengers Carried**

Interval	Installed	Required	Procedure
C	–	0	**(O) (P) (MV)**

May be inoperative provided:

a. No passengers are carried.
b. A maximum of 19 persons authorized for non-passenger carrying operations are carried.

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OPERATIONS(O)

1. No passengers may be carried.
2. A maximum of 19 persons (crew member, company employee, or inspector performing official duties) may be carried.
3. Flight crew members and authorized persons must be briefed prior to takeoff and landing for notification when seat belts must be used.

33-24-01 Passenger Information Signs

33-24-01-01 Flight Deck Automatic Function

Interval	Installed	Required	Procedure
C	1	0	**(O) (P)**

May be inoperative provided:
a. Manual control function operates normally.

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OPERATIONS (O)

1. Flight crew must notify passengers when seat belts should be fastened and smoking prohibited.

   Note: 1. The No Smoking signs automatic function illuminates the NO SMOKING signs when landing gear not up and locked, or cabin altitude above 10,000 feet, or passenger oxygen on.

   2. The Fasten Seat Belt signs automatic function illuminates the FASTEN SEAT BELT signs when landing gear not up and locked, or flap lever not up, or airplane altitude below THAI defined altitude, or cabin altitude above 10,000 feet, or passenger oxygen on.

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33-31-01 Main Wheel Well and Nose Wheel Well Service Area Lights

33-31-01A All Operations

Interval	Installed	Required	Procedure
C	6	0	**(P)**

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33-31-01 Main Wheel Well and Nose Wheel Well Service Area Lights

33-31-01B Procedures Do Not Require Use of Service Lights

Interval	Installed	Required	Procedure
D	6	0	**(P)**

Individual lights may be inoperative provided:

a. Procedures do not require use of service lights.

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33-37-01 Interior Cargo Lights

Interval	Installed	Required	Procedure
D	–	–	**(P)**

Individual lights may be inoperative provided:

a. Sufficient lighting remains for ground personnel to perform their duties.

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33-37-02 Exterior Cargo Lights

Interval	Installed	Required	Procedure
D	4	0	**(P)**

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33-41-01 Wing Illumination Lights

Interval	Installed	Required	Procedure
C	2	0	**(O) (P)**

May be inoperative provided:

a. Ground de-icing procedures do not require their use.

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OPERATIONS (O)

1. Wing illumination lights must be available during ground de-icing.

33-41-01 Wing Illumination Lights

33-41-01-01 WING Switch ON Light

Interval	Installed	Required	Procedure
C	1	0	**(P)**

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33-42-01 Landing and Taxi Lights

33-42-01A All Operations

Interval	Installed	Required	Procedure
B	8	6	**(P)**

May be inoperative provided:

a. Inoperative lights are not on same side.

b. At least one light in each symmetrical pair of lights (left to right) operates normally.

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33-42-01 **Landing and Taxi Lights**

33-42-01B **Day Operations**

Interval	Installed	Required	Procedure
C	8	0	**(P)**

May be inoperative provided operations are not conducted during night.

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33-42-02 Runway Turnoff Lights

Interval	Installed	Required	Procedure
C	2	0	**(P)**

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33-43-01 Position Lights

33-43-01A All Operations

Interval	Installed	Required	Procedure
C	8	4	**(P)**

May be inoperative provided:

a. One red wingtip light operates normally.
b. One green wingtip light operates normally.
c. For one or both white tailcone lights inoperative, both white rear wingtip lights operate normally.
d. For one or both white rear wingtip lights inoperative, both white tailcone lights operate normally.

33-43-01 Position Lights

33-43-01B Day Operations

Interval	Installed	Required	Procedure
C	8	0	**(P)**

May be inoperative between sunrise and sunset.

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33-43-01 **Position Lights**

33-43-01-01 **NAV Switch ON Light**

Interval	Installed	Required	Procedure
C	1	0	**(P)**

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33-44-01 Anti-Collision Lights

33-44-01-01 Red Upper and Lower Fuselage Beacon Lights

33-44-01-01A All Operations

Interval	Installed	Required	Procedure
C	2	1	**(P)**

May be inoperative provided:

a. White tail and wing tip strobe lights operate normally.

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OPERATIONS NOTE

1. There are four white strobe lights (two wing tip and two tail) and the two red beacon lights (upper and lower). If some but not all lights are inoperative in a system, the remaining operative lights may be used by selecting the associated switch ON.

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33-44-01 **Anti-Collision Lights**

33-44-01-01 **Red Upper and Lower Fuselage Beacon Lights**

33-44-01-01B **Day Operations**

Interval	Installed	Required	Procedure
C	2	0	**(P)**

May be inoperative provided:

a. At least one white tail or wing tip strobe light operates normally.
b. Operations are not conducted during night.

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OPERATIONS NOTE

1. There are four white strobe lights (two wing tip and two tail) and the two red beacon lights (upper and lower). If some but not all lights are inoperative in a system, the remaining operative lights may be used by selecting the associated switch ON.

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33-44-01 Anti-Collision Lights

33-44-01-02 White Tail and Wing Tip Strobe Lights

33-44-01-02A All Operations

Interval	Installed	Required	Procedure
C	4	0	**(P)**

May be inoperative provided:

a. Red upper and lower fuselage beacon lights operate normally.

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OPERATIONS NOTE

1. There are four white strobe lights (two wing tip and two tail) and the two red beacon lights (upper and lower). If some but not all lights are inoperative in a system, the remaining operative lights may be used by selecting the associated switch ON.

33-44-01 **Anti-Collision Lights**
33-44-01-02 **White Tail and Wing Tip Strobe Lights**

33-44-01-02B **Day Operations**

Interval	Installed	Required	Procedure
C	4	0	**(P)**

May be inoperative provided:

a. At least one red fuselage beacon light operates normally.
b. Operations are not conducted during night.

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OPERATIONS NOTE

1. There are four white strobe lights (two wing tip and two tail) and the two red beacon lights (upper and lower). If some but not all lights are inoperative in a system, the remaining operative lights may be used by selecting the associated switch ON.

33-44-01 Anti-Collision Lights

33-44-01-03 BEACON Switch ON Light

Interval	Installed	Required	Procedure
C	1	0	**(P)**

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33-45-01 Logo Lights

Interval	Installed	Required	Procedure
D	2	0	**(P)**

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33-45-01 Logo Lights

33-45-01-01 LOGO Switch ON Light

Interval	Installed	Required	Procedure
D	1	0	**(P)**

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33-49-01 Exterior Passenger Door Viewing Lights

Interval	Installed	Required	Procedure
C	8	4	**(P)**

May be inoperative provided:

a. At least one light at door 1L or 2L operates normally.
b. At least one light at door 1R or 2R operates normally.
c. At least one light at door 3L or 4L operates normally.
d. At least one light at door 3R or 4R operates normally.

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33-51-01 Emergency Lights System

Interval	Installed	Required	Procedure
C	1	0	**(O) (P) (MV)**

May be inoperative provided:

a. No passengers are carried.
b. A maximum of 19 persons authorized for non-passenger carrying operations are carried.

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OPERATIONS (O)

1. No passengers may be carried.
2. A maximum of 19 persons (crew member, company employee, or inspector performing offical duties) may be carried.
3. Flight crew members and authorized persons must be briefed prior to takeoff and landing for emergency evacuation.

33-51-01 Emergency Lights System

33-51-01-01 Main-Aisle Overhead Emergency Lights

Interval	Installed	Required	Procedure
B	–	–	**(P)**

Two main-aisle overhead emergency lights may be inoperative between each fore and aft pair of adjacent passenger entry doors provided:

a. Inoperative lights are not located over same aisle.

b. Overhead emergency lights integrated into exit locator signs at associated passenger entry doors operate normally.

Note: 1. In each cabin zone between doors (for example between doors 1L/1R and 2L/2R), one main-aisle light can be inoperative on the left side aisle and one can be inoperative on the right side aisle. This allows a total of two lights inoperative for each zone.

2. There is a total of 14 main-aisle-light units installed. Each of these light units has two lamps. If one of the two lamps in the unit is inoperative, then that light is considered inoperative.

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33-51-01 Emergency Lights System

33-51-01-02 Cross-Aisle Overhead Emergency Lights

Interval	Installed	Required	Procedure
C	–	–	**(P)**

One cross-aisle overhead emergency light may be inoperative at each passenger entry door pair.

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33-51-02 Floor Proximity Lighting Systems

Interval	Installed	Required	Procedure
C	–	0	**(O) (P) (MV)**

May be inoperative provided:

a. No passengers are carried.
b. A maximum of 19 persons authorized for non-passenger carrying operations are carried.

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OPERATIONS (O)

1. No passengers may be carried.
2. A maximum of 19 persons (crew member, company employee, or inspector performing official duties) may be carried.
3. Flight crew members and authorized persons must be briefed prior to takeoff and landing for emergency evacuation.

33-51-02 Floor Proximity Lighting Systems

33-51-02-01 Seat-Mounted Proximity Lights

Interval	Installed	Required	Procedure
C	–	–	**(P)**

May be inoperative provided:

a. Inoperative seat-mounted lights are not adjacent to each other.

b. Seat-mounted lights adjacent to each passenger entry door operate normally.

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33-51-02 Floor Proximity Lighting Systems

33-51-02-02 Main-Aisle Monument Mounted Proximity Lights

Interval	Installed	Required	Procedure
C	–	–	**(P)**

One main-aisle light may be inoperative per aisle side on a monument where two adjacent main-aisle lights per aisle side are installed.

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33-51-02 Floor Proximity Lighting Systems

33-51-02-03 Cross-Aisle Monument-mounted Proximity Lights

Interval	Installed	Required	Procedure
C	–	–	**(P)**

One cross-aisle light may be inoperative on a monument where two cross-aisle lights are installed provided light is not adjacent to attendant seat.

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33-51-02 **Floor Proximity Lighting Systems**

33-51-02-04 **Exit Identifiers**

33-51-02-04-01 **Door 1**

Interval	Installed	Required	Procedure
C	4	2	**(P)**

Aft exit identifier (back-light and/or flood-light) at each door may be inoperative.

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33-51-02 **Floor Proximity Lighting Systems**
33-51-02-04 **Exit Identifiers**

33-51-02-04-02 **Door 2 and Door 3**

Interval	Installed	Required	Procedure
C	8	4	**(P)**

One exit identifier flood-light at each door may be inoperative.

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33-51-02 **Floor Proximity Lighting Systems**
33-51-02-04 **Exit Identifiers**

33-51-02-04-03 **Door 4**

Interval	Installed	Required	Procedure
C	4	2	**(P)**

Forward exit identifier (back-light and/or flood-light) at each door may be inoperative.

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Table of Contents

ATA 34 **NAVIGATION** ATA 34-1
Table Of Contents ATA 34-1
34-12-01 Pitot Air Data Modules ATA 34-4
  34-12-01-01 Right Pitot Air Data Module ATA 34-4
  34-12-01-02 Left Pitot Air Data Module ATA 34-5
  34-12-01-03 Center Pitot Air Data Module ATA 34-6
34-12-02 Static Air Data Modules ATA 34-7
  34-12-02-01 Right Static Air Data Module ATA 34-7
  34-12-02-02 Left Static Air Data Module ATA 34-8
34-12-03 Angle Of Attack (AOA) Sensors ATA 34-9
  34-12-03-01 AOA Resolvers ATA 34-10
    34-12-03-01A One Resolver For Each Sensor Operates Normally ATA 34-10
    34-12-03-01B Both Resolvers For Remaining Sensor Operate Normally ATA 34-11
34-16-01 Altitude Alerting System ATA 34-12
34-21-01 Earth Reference System (ERS) ATA 34-13
  34-21-01-01 Inertial Reference Units (IRUs) ATA 34-13
    34-21-01-01-01 ON BAT Light ATA 34-14
  34-21-01-02 Attitude/Heading Reference Units (AHRUs) ATA 34-15
34-23-01 Non-Stabilized Magnetic Compass (Standby) ATA 34-16
34-24-01 Integrated Standby Flight Display (ISFD) ATA 34-17
  34-24-01-01 Attitude Indication ATA 34-17
  34-24-01-02 Airspeed Indication ATA 34-18
  34-24-01-03 Approach Mode ATA 34-19
  34-24-01-04 Heading Display ATA 34-20
  34-24-01-05 Switch Lights ATA 34-21
34-31-01 Instrument Landing Systems (ILS) ATA 34-22
34-31-02 GPS Landing Systems (GLS) ATA 34-23
34-31-03 Marker Beacon System ATA 34-24

34-31-04 **VOR Navigation Systems** ATA 34-25

34-31-05 **Global Positioning Systems (GPS)** ATA 34-26
  34-31-05A **One Inoperative** ATA 34-26
  34-31-05B **Both Inoperative** ATA 34-27

34-33-01 **Radio Altimeter Systems** ATA 34-28
  34-33-01-02 **Radio Altimeter Systems** ATA 34-28

34-42-01 **Weather Radar System** ATA 34-29
  34-42-01A **One Inoperative** ATA 34-29
  34-42-01B **Both Inop & Reactive Windshear Operative** ATA 34-30
  34-42-01C **Both Inop & Reactive Windshear Inop** ATA 34-31
  34-42-01-01 **Predictive Windshear Alert Mode** ATA 34-32
    34-42-01-01A **One Inoperative** ATA 34-32
    34-42-01-01B **Both Inop & Reactive Windshear Operative** ATA 34-33
    34-42-01-01C **Both Inop & Reactive Windshear Inop** ATA 34-34
  34-42-01-02 **Auto Tilt Function** ATA 34-35

34-42-02 **Traffic Collision And Avoidance System (TCAS)** ATA 34-36
  34-42-02A **One Inoperative** ATA 34-36
  34-42-02B **Both Inoperative** ATA 34-37

34-42-03 **ATC Transponder/Automatic Altitude Reporting Systems** ATA 34-38
  34-42-03A **One Inoperative** ATA 34-38
  34-42-03B **Both Inoperative** ATA 34-39

34-42-04 **Alerting And Transponder Control Panel** ATA 34-40

34-42-05 **Ground Proximity Warning System (GPWS)** ATA 34-41
  34-42-05A **One Inoperative** ATA 34-41
  34-42-05B **Both Inop & Predictive Windshear Operative** ATA 34-42
  34-42-05C **Both Inop & Predictive Windshear Inop** ATA 34-43
  34-42-05-01 **Advisory Callouts (Mode 6)** ATA 34-44
    34-42-05-01A **Advisory Callouts (Mode 6)** ATA 34-44

34-42-05-02 Windshear Alert Mode (Reactive) (Mode 7) ATA 34-45
  34-42-05-02A One Inoperative ATA 34-45
  34-42-05-02B Predictive Windshear Operates Normally ATA 34-46
  34-42-05-02C Predictive Windshear Inoperative ATA 34-47
34-42-05-03 Terrain Awareness Function ATA 34-48
  34-42-05-03A One Inoperative ATA 34-48
  34-42-05-03B Both Inoperative ATA 34-49
34-42-06 Automatic Dependent Surveillance-Broadcast (ADS-B) System ATA 34-50
34-42-06-01 ADS-B Out Extended Squitter Transmissions ATA 34-50
  34-42-06-01A Procedures Require Use ATA 34-50
  34-42-06-01B One Operative ATA 34-51
34-55-01 Distance Measuring Equipment (DME) ATA 34-52
34-61-01 Flight Management Function ATA 34-53
34-61-01 Flight Management Function ATA 34-54
34-61-01-01 Navigation Databases ATA 34-54

34-12-01 Pitot Air Data Modules

34-12-01-01 Right Pitot Air Data Module

Interval	Installed	Required	Procedure
B	1	0	**(M) (P)**

May be inoperative provided:

a. Left and center pitot probes are inspected before each departure.
b. Left and center pitot probe heater systems operate normally.
c. Left and center pitot air data modules operate normally.
d. Static air data modules operate normally.
e. AIR DATA/ATT instrument source switches operate normally.
f. Approach minimums do not require its use.

MAINTENANCE (M)

Note: The left, center and right pitot and static ADMs are interchangeable.

Inspect the left and center pitot probes before each departure (AMM DDG 34-12-01).

1. Visually examine the left and center pitot probe external installations. Confirm there is no damage or unwanted material in the pitot probe opening.

OPERATIONS NOTE

1. The NO LAND 3 advisory message will be displayed.

34-12-01 **Pitot Air Data Modules**

34-12-01-02 **Left Pitot Air Data Module**

Interval	Installed	Required	Procedure
B	1	0	**(M) (P)**

May be inoperative provided:

a. Right and center pitot probes are inspected before each departure.
b. Right and center pitot probe heater systems operate normally.
c. Right and center pitot air data modules operate normally.
d. Static air data modules operate normally.
e. AIR DATA/ATT instrument source switches operate normally.
f. Approach minimums do not require its use.

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MAINTENANCE (M)

Note: The left, center and right pitot and static ADMs are interchangeable.

Inspect the right and center pitot probes before each departure (AMM DDG 34-12-01).

1. Visually examine the right and center pitot probe external installations. Confirm there is no damage or unwanted material in the pitot probe opening.

OPERATIONS NOTE

1. The NO LAND 3 advisory message will be displayed.

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34-12-01 Pitot Air Data Modules

34-12-01-03 Center Pitot Air Data Module

Interval	Installed	Required	Procedure
B	1	0	**(M) (P)**

May be inoperative provided:

a. Left and right pitot probes are inspected before each departure.
b. Left and right pitot probe heater systems operate normally.
c. Left and right pitot air data modules operate normally.
d. Static air data modules operate normally.
e. AIR DATA/ATT instrument source switches operate normally.
f. Approach minimums do not require its use.

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Note: ISFD airspeed will be inoperative. The airplane must also be dispatched using MEL Item 34-24-01-02.

MAINTENANCE (M)

Note: The left, center and right pitot and static ADMs are interchangeable.

Inspect the left and right pitot probes before each departure (AMM DDG 34-12-01).

1. Visually examine the left and right pitot probe external installations. Confirm there is no damage or unwanted material in the pitot probe opening.

OPERATIONS NOTE

1. The NO LAND 3 advisory message will be displayed.

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34-12-02 Static Air Data Modules

34-12-02-01 Right Static Air Data Module

Interval	Installed	Required	Procedure
B	1	0	**(P)**

May be inoperative provided:

a. Left static air data module operates normally.
b. Pitot air data modules operate normally.
c. Pitot probe heater systems operate normally.
d. AIR DATA/ATT instrument source switches operate normally.
e. At least one GPS operates normally.
f. Approach minimums do not require its use.

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MAINTENANCE NOTE

1. The left, center and right pitot and static ADMs are interchangeable.

OPERATIONS NOTE

1. The NO LAND 3 advisory message will be displayed.

34-12-02 Static Air Data Modules

34-12-02-02 Left Static Air Data Module

Interval	Installed	Required	Procedure
B	1	0	**(P)**

May be inoperative provided:

a. Right static air data module operates normally.
b. Pitot air data modules operate normally.
c. Pitot probe heater systems operate normally.
d. AIR DATA/ATT instrument source switches operate normally.
e. At least one GPS operates normally.
f. Approach minimums do not require its use.

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MAINTENANCE NOTE

1. The left, center and right pitot and static ADMs are interchangeable.

OPERATIONS NOTE

1. The NO LAND 3 advisory message will be displayed.

34-12-03 Angle of Attack (AOA) Sensors

Interval	Installed	Required	Procedure
B	2	1	**(M) (P)**

One may be inoperative provided:

a. Associated sensor is deactivated.

b. Approach minimums do not require its use.

Note: The airplane must also be dispatched using MEL Item 30-32-01.

MAINTENANCE (M)

Deactivate inoperative AOA Sensor (AMM DDG 34-12-03).

1. For the Left AOA Sensor, using a flight deck multi-function display only, open the following circuit breakers and lock with an INOP tag:
   - AOAS CASE HEATER-L
   - AOAS VANE HEATER-L
2. For the Right AOA Sensor, using a flight deck multi-function display only, open the following circuit breakers and lock with an INOP tag:
   - AOAS CASE HEATER-R
   - AOAS VANE HEATER-R
3. Gain access to the AOA Sensor connectors.
4. Disconnect, cap, and stow the AOA sensor electrical connectors.
5. If vane is broken or damaged and electrical conductor is exposed, remove exposed conductor with wire cutter. Remove any loose vane material. Do not cover affected area with speed tape.
6. Confirm the FLIGHT CONTROL SYS status message is not displayed.

OPERATIONS NOTE

1. The NO LAND 3 advisory message will be displayed.

34-12-03 Angle of Attack (AOA) Sensors

34-12-03-01 AOA Resolvers

34-12-03-01A One Resolver For Each Sensor Operates Normally

Interval	Installed	Required	Procedure
B	4	2	**(P)**

May be inoperative provided:

a. One resolver for each sensor operates normally.

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34-12-03 Angle of Attack (AOA) Sensors
34-12-03-01 AOA Resolvers
34-12-03-01B Both Resolvers For Remaining Sensor Operate Normally

Interval	Installed	Required	Procedure
B	4	2	**(M) (P)**

May be inoperative provided:
a. Sensor with inoperative resolvers is deactivated.
b. Both resolvers for remaining sensor operate normally.
c. Approach minimums do not require its use.

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Note: The airplane must also be dispatched using MEL Item 30-32-01.

MAINTENANCE (M)

Deactivate the associated AOA Sensor (AMM DDG 34-12-03).

1. For the Left AOA Sensor, using a flight deck multi-function display only, open the following circuit breakers and lock with an INOP tag:
   - AOAS CASE HEATER-L
   - AOAS VANE HEATER-L
2. For the Right AOA Sensor, using a flight deck multi-function display only, open the following circuit breakers and lock with an INOP tag:
   - AOAS CASE HEATER-R
   - AOAS VANE HEATER-R
3. Gain access to the AOA Sensor connectors.
4. Disconnect, cap, and stow the AOA sensor electrical connectors.
5. Confirm the FLIGHT CONTROL SYS status message is not displayed.

OPERATIONS NOTE

1. The NO LAND 3 advisory message will be displayed.

34-16-01 Altitude Alerting System

Interval	Installed	Required	Procedure
A	1	0	**(O) (P)**

May be inoperative provided:

a. Autopilot with altitude hold and altitude capture operates normally.
b. Enroute operations (i.e., RVSM) do not require its use.
c. Airplane does not depart from a designated airport where repair or replacement can be made.
d. Repairs are made within three flight days.

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OPERATIONS(O)

1. Enroute operations that require altitude alerting such as RVSM may not be conducted.
2. Cross-check the altitude displays between the captain’s and first officer’s PFDs upon reaching and departing an assigned altitude. Periodically cross-check altitude indications when maintaining an assigned altitude.
3. Pilot monitoring should call out approaching and departing assigned altitudes.

34-21-01 Earth Reference System (ERS)

34-21-01-01 Inertial Reference Units (IRUs)

Interval	Installed	Required	Procedure
C	2	1	**(M) (P) (MV)**

One may be inoperative provided:
a. Inoperative IRU is deactivated.
b. AHRUs operate normally.
c. At least one GPS operates normally.

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MAINTENANCE (M)

Deactivate the inoperative IRU (AMM DDG 34-21-01).

1. For left IRU inoperative:
   A. Using a flight deck multi-function display only, open circuit breaker IRU-L and lock with an INOP tag.
   B. Open and collar P300 panel IRU BATTERY-L circuit breaker.
2. For right IRU inoperative:
   A Using a flight deck multi-function display only, open circuit breaker IRU-R and lock with an INOP tag.
   B. Open and collar P300 panel IRU BATTERY-R circuit breaker.

OPERATIONS NOTE

Associated IRS switch should be in the ON position.

34-21-01 Earth Reference System (ERS)

34-21-01-01 Inertial Reference Units (IRUs)

34-21-01-01-01 ON BAT Light

Interval	Installed	Required	Procedure
C	1	0	**(P) (MV)**

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34-21-01 Earth Reference System (ERS)

34-21-01-02 Attitude/Heading Reference Units (AHRUs)

Interval	Installed	Required	Procedure
C	2	1	**(M) (P) (MV)**

One may be inoperative provided:

a. Inoperative AHRU is deactivated.
b. IRUs operate normally.

MAINTENANCE (M)

Deactivate the inoperative AHRU (AMM DDG 34-21-01).

1. For left AHRU inoperative:
   A. Using a flight deck multi-function display only, open circuit breaker ATT HDG REF UNIT-L and lock with an INOP tag.
   B. Open and collar P300 panel ATT HDG REF UNIT BATTERY-L circuit breaker.
2. For right AHRU inoperative:
   A. Using a flight deck multi-function display only, open circuit breaker ATT HDG REF UNIT-R and lock with an INOP tag.
   B. Open and collar P300 panel ATT HDG REF UNIT BATTERY-R circuit breaker.

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34-23-01 Non-Stabilized Magnetic Compass (Standby)

Interval	Installed	Required	Procedure
B	1	0	**(P)**

May be inoperative provided:
a. ISFD heading display operates normally.

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34-24-01 Integrated Standby Flight Display (ISFD)

34-24-01-01 Attitude Indication

Interval	Installed	Required	Procedure
B	1	0	**(P)**

May be inoperative provided:

a. Operations are conducted in day VMC only.

b. Operations are not conducted into known or forecast over-the-top conditions.

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34-24-01 **Integrated Standby Flight Display (ISFD)**

34-24-01-02 **Airspeed Indication**

Interval	Installed	Required	Procedure
B	1	0	**(P)**

May be inoperative provided:

a. Left and right pitot air data modules operate normally.
b. Left and right pitot probe heater systems operate normally.
c. Left and right static air data modules operate normally.
d. AIR DATA/ATT instrument source switches operate normally.

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OPERATIONS NOTE

1. Altitude differences may be noted between the ISFD altimeter indication and the primary displays, particularly at higher speeds and altitudes.

34-24-01 Integrated Standby Flight Display (ISFD)

34-24-01-03 Approach Mode

Interval	Installed	Required	Procedure
C	1	0	**(P)**

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34-24-01 Integrated Standby Flight Display (ISFD)

34-24-01-04 Heading Display

Interval	Installed	Required	Procedure
B	1	0	**(P)**

May be inoperative provided:
a. Non-stabilized magnetic compass (standby) operates normally.

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34-24-01 Integrated Standby Flight Display (ISFD)

34-24-01-05 Switch Lights

Interval	Installed	Required	Procedure
C	5	0	**(P)**

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34-31-01 Instrument Landing Systems (ILS)

Interval	Installed	Required	Procedure
B	2	0	**(P) (MV)**

May be inoperative provided:

a. Approach minimums do not require their use.

Note: Failure of the left ILS will cause the ISFD approach mode to be inoperative. The airplane must also be dispatched using MEL Item 34-24-01-03.

OPERATIONS NOTE

1. The NO AUTOLAND ILS advisory message may be displayed.
2. For single ILS inoperative,the SGL SOURCE APPROACH caution message may be displayed.

34-31-02 GPS Landing Systems (GLS)

Interval	Installed	Required	Procedure
C	2	0	**(P) (MV)**

May be inoperative provided:
a. Approach minimums do not require their use.

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OPERATIONS NOTE

1. The NO AUTOLAND GLS advisory message may be displayed.
2. For single GLS inoperative,the SGL SOURCE APPROACH caution message may be displayed.

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34-31-03 Marker Beacon System

Interval	Installed	Required	Procedure
C	1	0	**(P)**

May be inoperative provided:
a. Approach minimums do not require its use.

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34-31-04 VOR Navigation Systems

Interval	Installed	Required	Procedure
C	2	–	**(P) (MV)**

Depending on the route to be flown, any of the following requirements may be applied:
a. Within USA, 2 VOR's must be operative.
b. 2 VOR's are required when the total navigation requirements can be satisfied with VOR.
c. Otherwise 1 is required.

OPERATIONS NOTE

1. For single VOR inoperative, the SGL SOURCE APPROACH caution message may be displayed.

34-31-05 Global Positioning Systems (GPS)

34-31-05A One Inoperative

Interval	Installed	Required	Procedure
C	2	1	**(P) (MV)**

One may be inoperative provided:
a. Enroute operations do not require its use.

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Note: For GPS L inoperative, the airplane must also be dispatched using MEL Item 23-24-01-01. The TCP L BACKUP NAV status message may be displayed.

OPERATIONS NOTE

1. The NAV SINGLE GPS advisory message will be displayed.

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34-31-05 **Global Positioning Systems (GPS)**

34-31-05B **Both Inoperative**

Interval	Installed	Required	Procedure
C	2	0	**(P) (MV)**

May be inoperative provided:

a. Enroute operations do not require its use.
b. IRUs operate normally.

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Note:
1. The TERR POS advisory message will be displayed. The airplane must also be dispatched using MEL Item 34-42-05-03B.
2. For GPS L inoperative, the airplane must also be dispatched using MEL Item 23-24-01-01. The TCP L BACKUP NAV status message may be displayed.
3. The ADS-B Out data will be inoperative. The airplane must also be dispatched using MEL Item 34-42-06-01.

OPERATIONS NOTE

1. The GPS advisory message will be displayed.
2. The NAV UNABLE RNP caution message may be displayed during lengthy ground operations and flight crew should accomplish the associated non-normal checklist.
3. The RWY/POS update on the flight management TAKEOFF REF page is active when GPS is inoperative.

34-33-01 Radio Altimeter Systems

34-33-01-02 Radio Altimeter Systems

Interval	Installed	Required	Procedure
B	2	1	**(M) (O) (P)**

May be inoperative provided:
a. NO AUTOLAND advisory message is displayed.
b. Approach minimums do not require its use.
c. Operating procedures do not require its use.

Note: 1. The NO AUTOLAND advisory message may be displayed. The airplane must also be dispatched using MEL Item 22-11-07.
2. If the AUTOFLIGHT FUNCTION status message is also displayed, the airplane must also be dispatched using MEL Item 22-11-01.

MAINTENANCE (M)

1. Make sure Radio Altimeter circuit breakers LRRA L PWR (CE3433115) and LRRA R PWR (CE3433213) are closed prior to dispatch. Opening the circuit breaker for a Radio Altimeter does not render it inoperative. Radio Altimeter circuit breakers are commanded to close during takeoff after the airplane speed exceeds 40kts (AMM DDG 34-33-01).

OPERATIONS (O)

1. The SGL SOURCE RAD ALT advisory message will be displayed.
2. Autothrottle automatic flare retard will be disabled. Operate thrust levers manually during landing flare.
3. If the SGL SOURCE RAD ALT advisory message is displayed, set A/T ARM switches to OFF prior to performing the landing checklist.
4. If the selected roll mode does not engage, select an alternate roll mode.
5. If autopilot does not engage when selected, fly the airplane manually and attempt to re-engage when the RA indicates above 200 feet.
6. The autothrottle disconnects at 400 feet and is not able to be re-engaged until the RA indicates above 1,500 feet. Once above 1,500 feet, the autothrottle can be re-engaged and used normally.

34-42-01 Weather Radar System

34-42-01A One Inoperative

Interval	Installed	Required	Procedure
D	2	1	**(P)**

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Note: The WINDSHEAR PREDICTIVE L(R) status message will be displayed after turning inoperative weather radar OFF. The airplane must also be dispatched using MEL Item 34-42-01-01A.

OPERATIONS NOTE

1. Set the inoperative weather radar OFF using the Tuning and Control Panel (TCP) SYS POWER page.

34-42-01 **Weather Radar System**

34-42-01B **Both Inop & Reactive Windshear Operative**

Interval	Installed	Required	Procedure
C	2	0	**(O) (P)**

May be inoperative provided:

a. Reactive windshear alert (GPWS mode 7) operates normally.

b. No weather reports indicate thunderstorms or no other potentially hazardous weather conditions detectable by radar may reasonably be expected enroute.

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OPERATIONS (O)

1. Refer to FCOM Supplementary Procedures SP.16 for windshear avoidance and recovery.

Note: The WINDSHEAR SYS advisory message will be displayed.

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34-42-01 **Weather Radar System**

34-42-01C **Both Inop & Reactive Windshear Inop**

Interval	Installed	Required	Procedure
B	2	0	**(O) (P)**

May be inoperative provided:

a. No weather reports indicate thunderstorms or no other potentially hazardous weather conditions detectable by radar may reasonably be expected enroute.

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OPERATIONS (O)

1. Refer to FCOM Supplementary Procedures SP.16 for windshear avoidance and recovery.

Note: The WINDSHEAR SYS advisory message will be displayed.

34-42-01 Weather Radar System

34-42-01-01 Predictive Windshear Alert Mode

34-42-01-01A **One Inoperative**

Interval	Installed	Required	Procedure
D	2	1	**(P)**

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34-42-01 **Weather Radar System**

34-42-01-01 **Predictive Windshear Alert Mode**

34-42-01-01B **Both Inop & Reactive Windshear Operative**

Interval	Installed	Required	Procedure
C	2	0	**(O) (P)**

May be inoperative provided:

a. Reactive windshear alert (GPWS mode 7) operates normally.

OPERATIONS (O)

Refer to FCOM Supplementary Procedures SP.16 for windshear avoidance and recovery.

Note: The WINDSHEAR SYS advisory message will be displayed.

34-42-01 **Weather Radar System**

34-42-01-01 **Predictive Windshear Alert Mode**

34-42-01-01C **Both Inop & Reactive Windshear Inop**

Interval	Installed	Required	Procedure
B	2	0	**(O) (P)**

May be inoperative provided:

a. Takeoffs and landings are not conducted in known or forecast windshear conditions.

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OPERATIONS (O)

Refer to FCOM Supplementary Procedures SP.16 for windshear avoidance and recovery.

Note: The WINDSHEAR SYS advisory message will be displayed.

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34-42-01 **Weather Radar System**

34-42-01-02 **Auto Tilt Function**

Interval	Installed	Required	Procedure
C	1	0	**(P)**

OPERATIONS NOTE

1. Manual TILT adjustments may be necessary to optimize weather display.

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34-42-02 Traffic Collision and Avoidance System (TCAS)

34-42-02A One Inoperative

Interval	Installed	Required	Procedure
C	2	1	**(P)**

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34-42-02 **Traffic Collision and Avoidance System (TCAS)**

34-42-02B **Both Inoperative**

Interval	Installed	Required	Procedure
B	2	0	**(M) (P) (MV)**

May be inoperative provided:

a. System is deactivated and secured.

b. Enroute or approach procedures do not require its use.

c. Flight does not depart from BKK for international flight.

Note: Minimum requirements for a TCAS system to be considered operative are at least:

1. One TA visual display and audio function are operative; or
2. One RA visual display and audio function are operative.
3. OP is the center of coordination in fight planning and flight dispatch.

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34-42-03 ATC Transponder/Automatic Altitude Reporting Systems

34-42-03A One Inoperative

Interval	Installed	Required	Procedure
D	2	1	**(P)**

One must be operative for flight planned at flight levels and/or in areas where transponder is required by national regulations. Otherwise 0.

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34-42-03 ATC Transponder/Automatic Altitude Reporting Systems

34-42-03B Both Inoperative

Interval	Installed	Required	Procedure
B	2	0	**(P) (MV)**

May be inoperative provided:

a. Enroute operations do not require its use.

b. Prior to flight, approval is obtained from ATC facilities having jurisdiction over the planned route of flight.

Note: The ADS-B Out data will be inoperative. The airplane must also be dispatched using MEL item 34-42-06-01.

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34-42-04 Alerting and Transponder Control Panel

Interval	Installed	Required	Procedure
C	1	0	**(O) (P)**

May be inoperative provided:

a. Tuning and control panels operate normally.

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OPERATIONS (O)

Use a TCP to perform alerting and transponder panel functions:

1. Use the MENU key to access the ALERT/XPDR CTL on/off control and ALERT/XPDR menu.
2. Use the XPDR menu to access the transponder IDENT function.

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34-42-05 Ground Proximity Warning System (GPWS)

34-42-05A One Inoperative

Interval	Installed	Required	Procedure
C	2	1	**(P)**

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34-42-05 **Ground Proximity Warning System (GPWS)**

34-42-05B **Both Inop & Predictive Windshear Operative**

Interval	Installed	Required	Procedure
A	2	0	**(O) (P)**

May be inoperative provided:

a. Predictive windshear alert mode operates normally.

b. Repairs are made within 6 flights or 2 calendar days, which occurs first.

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OPERATIONS (O)

1. Use of all systems available (autopilot, autoland, ILS and FMF), approach altitude callouts, and vertical situation display (VSD) to maintain flight crew awareness of airplane altitude and flight path.

34-42-05 Ground Proximity Warning System (GPWS)

34-42-05C Both Inop & Predictive Windshear Inop

Interval	Installed	Required	Procedure
A	2	0	**(O) (P)**

May be inoperative provided:

a. Repairs are made within two flight days.

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OPERATIONS (O)

1. Use of all systems available (autopilot, autoland, ILS and FMF), approach altitude callouts, and vertical situation display (VSD) to maintain flight crew awareness of airplane altitude and flight path.
2. Flight crew must review windshear avoidance and windshear recovery procedures.

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34-42-05 Ground Proximity Warning System (GPWS)

34-42-05-01 Advisory Callouts (Mode 6)

34-42-05-01A Advisory Callouts (Mode 6)

Interval	Installed	Required	Procedure
B	–	0	**(O) (P)**

May be inoperative provided:

a. Operational procedures are applied.

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OPERATIONS (O)

1. Flight crew must maintain awareness of airplane altitude and flight path. Use of all systems available (autopilot, autoland, ILS and FMCS) and approach altitude callouts, and vertical situation display (VSD).

34-42-05 Ground Proximity Warning System (GPWS)

34-42-05-02 Windshear Alert Mode (Reactive) (Mode 7)

34-42-05-02A One Inoperative

Interval	Installed	Required	Procedure
C	2	1	**(P)**

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34-42-05 Ground Proximity Warning System (GPWS)
34-42-05-02 Windshear Alert Mode (Reactive) (Mode 7)
34-42-05-02B Predictive Windshear Operates Normally

Interval	Installed	Required	Procedure
C	2	0	**(O) (P)**

May be inoperative provided:

a. Predictive windshear alert mode operates normally.

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OPERATIONS (O)

1. Flight crew should turn on the weather radar system before takeoff and during landing when weather reports indicate thunderstorms or other potentially hazardous weather conditions.

   Note: The WINDSHEAR SYS advisory message will be displayed.

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34-42-05 Ground Proximity Warning System (GPWS)
34-42-05-02 Windshear Alert Mode (Reactive) (Mode 7)
34-42-05-02C Predictive Windshear Inoperative

Interval	Installed	Required	Procedure
B	2	0	**(O) (P)**

May be inoperative provided:

a. Flight crew review windshear avoidance and windshear recovery procedures.

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OPERATIONS (O)

1. Flight crew review windshear avoidance and windshear recovery procedures.

   Note: The WINDSHEAR SYS advisory message will be displayed.

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34-42-05 Ground Proximity Warning System (GPWS)

34-42-05-03 Terrain Awareness Function

34-42-05-03A One Inoperative

Interval	Installed	Required	Procedure
C	2	1	**(P)**

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34-42-05 Ground Proximity Warning System (GPWS)
34-42-05-03 Terrain Awareness Function

34-42-05-03B **Both Inoperative**

Interval	Installed	Required	Procedure
B	2	0	**(O) (P)**

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OPERATIONS (O)

1. Use of all systems available (autopilot, autoland, ILS and FMF), approach altitude callouts, and vertical situation display (VSD) to maintain flight crew awareness of airplane altitude and flight path.

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34-42-06 Automatic Dependent Surveillance-Broadcast (ADS-B) System

34-42-06-01 ADS-B Out Extended Squitter Transmissions

34-42-06-01A Procedures Require Use

Interval	Installed	Required	Procedure
C	2	0	**(O) (P) (MV)**

Both may be inoperative provided:

a. Voice or datalink communication is used for position reporting.

b. ATC in concerned FIR is notified before flight.

Note: 1. Flight may be limited to FL 290.

2. Additional horizontal aircraft separations may be imposed.

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OPERATIONS (O)

1. Use voice or datalink communication for position reporting.

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34-42-06 Automatic Dependent Surveillance-Broadcast (ADS- B) System

34-42-06-01 ADS-B Out Extended Squitter Transmissions

34-42-06-01B One Operative

Interval	Installed	Required	Procedure
C	2	1	**(O) (P) (MV)**

One may be inoperative provided:

a. Transponder on the operative side is selected.

Note: Any ADS-B function that operates normally may be used.

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OPERATIONS (O)

1. Select transponder to the operative side.

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34-55-01 Distance Measuring Equipment (DME)

Interval	Installed	Required	Procedure
C	2	–	**(P) (MV)**

Depending on the route to be flown, any of these requirements may be applied:

a. For RNP operation, if both GPS fail, two DME must be operative.

b. One DME is required for flight based on VOR/DME with all 3 IRS's inoperative.

c. One DME is required for flight at or above FL 240 within USA and in CPH TMA. Within USA, if DME becomes inoperative enroute, notify ATC of that failure as soon as it occurs.

Flight in CPH TMA with inoperative DME requires permission by ATS before takeoff.

d. Otherwise 0.

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34-61-01 Flight Management Function

Interval	Installed	Required	Procedure
C	3	2	**(P)**

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34-61-01 Flight Management Function

34-61-01-01 Navigation Databases

Interval	Installed	Required	Procedure
A	3	0	**(P)**

May be inoperative provided:

a. Operations do not require its use.
b. It is not used in a primary navigation system.
c. Current aeronautical charts are used to verify navigation fixes before dispatch.
d. The ICAO Flight Plan is updated (as required) to notify ATC of the navigation equipment status of the aircraft.
e. Is repaired within ten (10) flight days.

Note: An out-of-currency or out-of-date navigation database is not authorized MEL relief.

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Table of Contents

ATA 35 OXYGEN .... ATA 35-1
Table Of Contents .... ATA 35-1
35-11-01 Crew Oxygen Pressure Indication System .... ATA 35-2
35-11-01-01 Overboard Discharge Indicator Disc .... ATA 35-3
35-21-01 Passenger Oxygen System .... ATA 35-4
35-21-01-01 Power Channels .... ATA 35-5
35-21-02 Passenger Oxygen Controllers .... ATA 35-6
35-21-02A No Altitude Restrictions .... ATA 35-6
35-21-02B Altitude Restrictions .... ATA 35-7
35-21-03 Passenger Oxygen Automatic Presentation System .... ATA 35-8
35-21-04 Passenger Oxygen ON Light .... ATA 35-9
35-21-05 OFCR/OFAR Oxygen Controllers .... ATA 35-10
35-21-05-01 Seat/Bunk Controllers .... ATA 35-10
35-21-05-01A Seat/Bunk Blocked .... ATA 35-10
35-21-05-01B Altitude Restrictions Are Applied .... ATA 35-11
35-31-01 Portable Oxygen Bottles Or Units (Including Masks And Hoses) .... ATA 35-12
35-31-02 Portable Protective Breathing Equipment (PBE) .... ATA 35-13
35-31-02-01 787-8 .... ATA 35-13
35-31-02-02 787-9 .... ATA 35-14

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35-11-01 Crew Oxygen Pressure Indication System

Interval	Installed	Required	Procedure
C	1	0	**(M) (P)**

May be inoperative provided:

a. Crew oxygen supply is verified to be above minimum required before each departure.
b. Crew oxygen shutoff valve(s) is verified open.

MAINTENANCE (M)

Verify crew oxygen supply is above minimum required for dispatch and oxygen shutoff valve(s) is open (AMM DDG 35-11-01).

1. Using a flight deck multi-function display only, open circuit breaker CREW OXY-PRESS INDICATION and lock with an INOP tag.
2. Gain access to right side of the Main Equipment Center, outboard of the nose landing gear wheel well.
3. Verify crew oxygen pressure shown on the gauge of the crew oxygen cylinder(s) is above the minimum required for dispatch.
4. Verify crew oxygen cylinder shutoff valve(s) is open.

35-11-01 **Crew Oxygen Pressure Indication System**

35-11-01-01 **Overboard Discharge Indicator Disc**

Interval	Installed	Required	Procedure
C	1	0	**(P)**

May be damaged or missing.

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35-21-01 Passenger Oxygen System

Interval	Installed	Required	Procedure
B	1	0	**(O) (P) (MV)**

May be inoperative provided:
Portable oxygen units must be available for 10% of passenger cabin occupants for any period in excess of 30 minutes that the pressure in the compartment will be between 10,000 and 13,000 feet.

a. Both air conditioning packs operate normally.
b. Pressurization system operates normally.
c. Passengers are appropriately briefed.

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MAINTENANCE NOTE

1. For an air conditioning pack to be operating normally, certain items associated with that system must operate normally. See MEL Item 21-51-01 for a list of those items.
2. For the pressurization system to be operating normally, the following items associated with the pressurization system must be operating normally:

MEL Item	Associated Status Message
21-31-01	CPCS CONTROLS
21-31-02	None
21-31-04	CPCS REMOTE SENSOR FWD CPCS REMOTE SENSOR AFT
21-31-05	None
21-31-06	None
21-31-07	None
21-31-08	None
21-32-01	None
MEL Item	**Associated Advisory Message**
21-31-03	OUTFLOW VALVE FWD OUTFLOW VALVE AFT

OPERATIONS (O)

1. Do not conduct flight where the minimum enroute altitude is above 13,000 feet MSL.
2. Maintain altitude at or below FL 250.

35-21-01 Passenger Oxygen System

35-21-01-01 Power Channels

Interval	Installed	Required	Procedure
C	18	9	**(P)**

One channel in each PSU zone may be inoperative.

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35-21-02 Passenger Oxygen Controllers

35-21-02A No Altitude Restrictions

Interval	Installed	Required	Procedure
B	113	0	**(M) (P) (MV)**

May be inoperative provided:

a. Associated passenger seats are blocked and placarded to prevent occupancy.
b. Associated flight attendant seat is considered inoperative.
c. Associated lavatory door is locked closed and placarded INOPERATIVE - DO NOT ENTER.
d. Associated galley area curtain nearest operative oxygen controllers is secured open or removed.

Note: These provisions are not intended to prohibit lavatory inspections by crew members.

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Note: For inoperative flight attendant seat oxygen controllers, the airplane must also be dispatched using MEL Item 25-25-01.

MAINTENANCE (M)

1. For inoperative cabin, lavatory and galley oxygen controllers, configure the airplane as required (AMM DDG 35-21-02).
   A. For inoperative cabin oxygen controllers, block and placard associated seats.
   B. For inoperative lavatory oxygen controllers, close, lock and placard associated lavatory to prevent occupancy.
   C. For inoperative galley oxygen controllers, secure open or remove associated galley area curtain nearest operative oxygen controllers.

UNCONTROLLED IF DOWNLOADED OR PRINTED

35-21-02 Passenger Oxygen Controllers

35-21-02B Altitude Restrictions

Interval	Installed	Required	Procedure
B	113	0	**(O) (P)**

May be inoperative provided:

a. Appropriate portable oxygen supplies are available.
b. Both air conditioning packs operate normally.
c. Pressurization system operates normally.
d. Appropriate altitude adjustments are applied.
e. Passengers are appropriately briefed.

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MAINTENANCE NOTE

1. For an air conditioning pack to be operating normally, certain items associated with that system must operate normally. See MEL Item 21-51-01 for a list of those items.
2. For the pressurization system to be operating normally, the following items associated with the pressurization system must be operating normally:

MEL Item	Associated Status Message
21-31-01	CPCS CONTROLS
21-31-02	None
21-31-04	CPCS REMOTE SENSOR FWD CPCS REMOTE SENSOR AFT
21-31-05	None
21-31-06	None
21-31-07	None
21-31-08	None
21-32-01	None
MEL Item	**Associated Advisory Message**
21-31-03	OUTFLOW VALVE FWD OUTFLOW VALVE AFT

OPERATIONS (O)

1. Use MEL Item 35-21-01 (O) procedure.

35-21-03 Passenger Oxygen Automatic Presentation System

Interval	Installed	Required	Procedure
B	1	0	**(P) (MV)**

May be inoperative provided:
a. Flight remains at or below FL 300.

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35-21-04 Passenger Oxygen ON Light

Interval	Installed	Required	Procedure
C	1	0	**(P)**

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35-21-05 OFCR/OFAR Oxygen Controllers

35-21-05-01 Seat/Bunk Controllers

35-21-05-01A Seat/Bunk Blocked

Interval	Installed	Required	Procedure
C	–	0	**(M) (P)**

May be inoperative provided:
a. Associated seat/bunk is blocked and placarded to prevent occupancy.

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MAINTENANCE (M)
Block and placard associated seat/bunk (AMM DDG 35-21-05)

35-21-05 **OFCR/OFAR Oxygen Controllers**
35-21-05-01 **Seat/Bunk Controllers**

35-21-05-01B **Altitude Restrictions Are Applied**

Interval	Installed	Required	Procedure
C	–	0	**(O) (P)**

May be inoperative provided:

a. Appropriate portable oxygen supplies are available.
b. Both air conditioning packs operate normally.
c. Pressurization system operates normally.
d. Appropriate altitude adjustments are applied.
e. Crew are appropriately briefed.

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MAINTENANCE NOTE

1. For an air conditioning pack to be operating normally, certain items associated with that system must operate normally. See DDG Item 21-51-01 for a list of those items.
2. For the pressurization system to be operating normally, the following items associated with the pressurization system must be operating normally:

MEL Item	Associated Status Message
21-31-01	CPCS CONTROLS
21-31-02	None
21-31-04	CPCS REMOTE SENSOR FWD CPCS REMOTE SENSOR AFT
21-31-05	None
21-31-06	None
21-31-07	None
21-31-08	None
21-32-01	None
MEL Item	**Associated Advisory Message**
21-31-03	OUTFLOW VALVE FWD OUTFLOW VALVE AFT

OPERATIONS (O)

1. Use MEL Item 35-21-01 (O) procedure.

35-31-01 Portable Oxygen Bottles or Units (Including Masks and Hoses)

Interval	Installed	Required	Procedure
C	20	8	**(M) (P)**

May be inoperative or removed provided:

a. An inoperative or not properly serviced portable oxygen bottle/unit remains in a certified location until removed or serviced at the next suitable maintenance facility.

b. Location placarding is removed or obscured.

c. Required distribution is maintained.

Note:
1. Inoperative portable oxygen bottles or units, removed from a certified location or removed from the aircraft.
2. Medical equipment installed in the aircraft as part of an EMS operation is not considered part of the normal complement of equipment. No MEL relief applies to that equipment.

MAINTENANCE (M)

Ensure the inoperative portable oxygen bottles or units remain in a certified location and required distribution is maintained (AMM DDG 35-31-01).

1. Ensure inoperative or not properly serviced portable oxygen bottle/unit remains in a certified location until removed or serviced at the next suitable maintenance facility.
2. Ensure required distribution of serviceable units is maintained throughout the airplane.

35-31-02 Portable Protective Breathing Equipment (PBE)

35-31-02-01 787-8

TQA to TQF

Interval	Installed	Required	Procedure
D	14	7	**(P)**

One or more may be inoperative or removed provided:

a. Inoperative PBE remains in a certified location until removed from the aircraft.
b. Location placarding is removed or obscured.
c. Required distribution is maintained.
d. One is available in flight deck and each crew rest.
e. One PBE is available at each location for Halon extinguisher.

Note: Inoperative PBEs, removed from a certified location, or removed from the aircraft, are subject to dangerous goods regulations.

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35-31-02 **Portable Protective Breathing Equipment (PBE)**

35-31-02-02 **787-9** **TWA to TWB**

Interval	Installed	Required	Procedure
D	15	7	**(P)**

One or more be inoperative or missing provided:

a. Inoperative PBE remains in a certified location until removed from the aircraft.
b. Location placarding is removed or obscured.
c. Required distribution is maintained.
d. One is available in flight deck and each crew rest.
e. One PBE is available at each location for Halon extinguisher.

Note: Inoperative PBEs, removed from a certified location, or removed from the aircraft, are subject to dangerous goods regulations.

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Table of Contents

ATA 38 **WATER/WASTE** ATA 38-1
Table Of Contents ATA 38-1
38-10-01 **Potable Water Systems** ATA 38-2
38-10-01A **Individual Components Deactivated/Isolated** ATA 38-2
38-10-01B **System Drained And Not In Service** ATA 38-3
38-10-01-01 **Potable Water Indication System** ATA 38-4
38-30-01 **Waste Water System** ATA 38-5
38-30-01A **Individual Components Deactivated/Isolated** ATA 38-5
38-30-01B **Lavatory Locked Closed** ATA 38-6
38-30-01-01 **Vacuum Blowers** ATA 38-7

38-10-01 Potable Water Systems

38-10-01A Individual Components Deactivated/Isolated

Interval	Installed	Required	Procedure
C	–	–	**(M) (P) (MV)**

Individual components may be inoperative provided:

a. Associated components are deactivated or isolated.

b. Associated system components are verified not to have leaks.

Note: Any portion of system which operates normally may be used.

MAINTENANCE (M)

1. Deactivate or isolate inoperative components and verify associated system components do not have leaks (AMM DDG 38-10-01).

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38-10-01 Potable Water Systems

38-10-01B System Drained And Not In Service

Interval	Installed	Required	Procedure
C	1	0	**(M) (P) (MV)**

May be inoperative provided:
a. System is drained.

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MAINTENANCE (M)

1. Drain potable water system and establish procedures to ensure potable water system is not serviced (AMM DDG 38-10-01).

38-10-01 Potable Water Systems

38-10-01-01 Potable Water Indication System

Interval	Installed	Required	Procedure
D	–	–	**(P)**

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38-30-01 Waste Water System

38-30-01A Individual Components Deactivated/Isolated

Interval	Installed	Required	Procedure
C	–	0	**(M) (P) (MV)**

Individual components may be inoperative provided:

a. Associated components are deactivated or isolated.

b. Associated system components are verified not to have leaks.

Note: Any portion of system which operates normally may be used.

MAINTENANCE (M)

1. Deactivate or isolate inoperative components and verify associated system components do not have leaks (AMM DDG 38-30-01).

38-30-01 **Waste Water System**

38-30-01B **Lavatory Locked Closed**

Interval	Installed	Required	Procedure
C	–	0	**(M) (P) (MV)**

Associated lavatory may be inoperative provided:

a. Associated components are deactivated or isolated to prevent leaks.
b. Associated lavatory door is locked closed and placarded INOPERATIVE— PLEASE DO NOT USE.
c. P-i-C is informed of the defect and that the number of inoperative lavatories is deemed acceptable in terms of passenger comfort.

Note: These provisions are not intended to prohibit inspections by crew members.

MAINTENANCE (M)

Deactivate or isolate inoperative components and verify associated system components do not have leaks (AMM DDG 38-10-01).

1. Deactivate or isolate inoperative components.
2. For leaking waste tank, drain the tank. Do not add the precharge chemical to the associated waste tank.
3. Close, lock and placard the associated lavatory door.

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38-30-01 Waste Water System

38-30-01-01 Vacuum Blowers

Interval	Installed	Required	Procedure
C	2	–	**(M) (O) (P)**

May be inoperative provided:

a. Associated vacuum blower is deactivated.

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MAINTENANCE (M)

Deactivate the inoperative vacuum blower (AMM DDG 38-30-01).

1. For the left vacuum blower inoperative:
   A. Using a flight deck multi-function display only, open the VAC BLOWER-L circuit breaker and lock with an INOP tag.
2. For the right vacuum blower inoperative:
   A. Using a flight deck multi-function display only, open the VAC BLOWER-R circuit breaker and lock with an INOP tag.

OPERATIONS (O)

1. Galley sinks and lavatories affected by inoperative vacuum blower are not used on the ground or at flight altitudes below 16,000 feet.

   Note: Inoperative vacuum blower(s) may result in galley cooling unit (GCU) condensate filling the galley sink reservoirs, which cannot drain on the ground without vacuum. When operating in humid conditions, ground operations should minimize GCU usage and avoid pouring fluid into the sink. Consideration should be given to minimize humidity in the cabin by keeping doors closed.

Table of Contents

ATA 42 INTEGRATED MODULAR AVIONICS ATA 42-1
Table Of Contents ATA 42-1
42-21-01 Common Computing Resource General Processing Modules (GPMs) ATA 42-2
42-21-01-01 Position 8L ATA 42-2
42-21-01-01-01 EWOC-HF Communication System Power Control Section 47 Modification Incorporated ATA 42-2
42-21-01-01-02 EWOC-HF Communication System Power Control Section 47 Modification Not Incorporated ATA 42-3
42-21-01-02 Position 8R ATA 42-4
42-21-02 Remote Data Concentrators (RDCs) ATA 42-5
42-21-02-01 RDCs 1 and 3 ATA 42-5
42-21-02-01A Left Thrust Reverser Sensors Operate Normally ATA 42-5
42-21-02-01B Left Thrust Reverser Sensors Inoperative ATA 42-6
42-21-02-02 RDCs 2 and 4 ATA 42-7
42-21-02-02A Right Thrust Reverser Sensors Operate Normally ATA 42-7
42-21-02-02B Right Thrust Reverser Sensors Inoperative ATA 42-8
42-21-02-03 RDCs 5-18, 21, 23 ATA 42-9
42-21-02-04 RDC 19 ATA 42-10
42-21-02-04A RDC 19 Fault ATA 42-10
42-21-02-04B RDC 19 Inoperative ATA 42-11

42-21-01 Common Computing Resource General Processing Modules (GPMs)

42-21-01-01 Position 8L

42-21-01-01-01 EWOC-HF Communication System Power Control Section 47 Modification Incorporated

TQC to TQF
TWA to TWB

Interval	Installed	Required	Procedure
C	1	0	**(M) (P)**

May be inoperative provided:

a. Position 8R operates normally.

MAINTENANCE (M)

Note:
1. GPMs are interchangeable.
2. Data load is not required for inoperative GPM in position 8L. Data load is required following installation of any operating GPM (AMM DDG 42-21-01).

42-21-01 Common Computing Resource General Processing Modules (GPMs)

42-21-01-01 Position 8L

42-21-01-01-02 EWOC-HF Communication System Power Control Section 47 Modification Not Incorporated

TQA to TQB

Interval	Installed	Required	Procedure
C	1	0	**(M) (P)**

May be inoperative provided:

a. Position 8R operates normally.
b. One high frequency (HF) communication system is considered inoperative.

Note: The airplane must also be dispatched using MEL Item 23-11-01.

MAINTENANCE (M)

1. Use MEL Item 42-21-01-01-01 (M) procedure.

42-21-01 **Common Computing Resource General Processing Modules (GPMs)**

42-21-01-02 **Position 8R**

Interval	Installed	Required	Procedure
C	1	0	**(M) (P)**

May be inoperative provided:

a. Position 8L operates normally.

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MAINTENANCE (M)

Note: 1. GPMs are interchangeable.
2. Data load is not required for inoperative GPM in position 8R.

Data load is required following installation of any operating GPM (AMM DDG 42-21-01).

42-21-02 Remote Data Concentrators (RDCs)

42-21-02-01 RDCs 1 and 3

42-21-02-01A Left Thrust Reverser Sensors Operate Normally

Interval	Installed	Required	Procedure
C	2	1	**(P)**

May be dispatched with CCS RDC FAULT provided:
a. Remaining RDCs operate normally.
b. Left thrust reverser locking actuator proximity sensors operate normally.

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MAINTENANCE NOTE

1. RDCs are interchangeable.

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42-21-02 Remote Data Concentrators (RDCs)
42-21-02-01 RDCs 1 and 3
42-21-02-01B Left Thrust Reverser Sensors Inoperative

Interval	Installed	Required	Procedure
C	2	1	**(P)**

May be dispatched with CCS RDC FAULT provided:
a. Remaining RDCs operate normally.
b. Left thrust reverser is considered inoperative.

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Note: For ENG REVERSER SNSR L status message displayed, the airplane must also be dispatched using MEL item 78-31-01 for the left thrust reverser.

MAINTENANCE NOTE

1. RDCs are interchangeable.

42-21-02 Remote Data Concentrators (RDCs)

42-21-02-02 RDCs 2 and 4

42-21-02-02A Right Thrust Reverser Sensors Operate Normally

Interval	Installed	Required	Procedure
C	2	1	**(P)**

May be dispatched with CCS RDC FAULT provided:

a. Remaining RDCs operate normally.

b. Right thrust reverser locking actuator proximity sensors operate normally.

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MAINTENANCE NOTE

1. RDCs are interchangeable.

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42-21-02 Remote Data Concentrators (RDCs)
42-21-02-02 RDCs 2 and 4

42-21-02-02B Right Thrust Reverser Sensors Inoperative

Interval	Installed	Required	Procedure
C	2	1	**(P)**

May be dispatched with CCS RDC FAULT provided:
a. Remaining RDCs operate normally.
b. Right thrust reverser is considered inoperative.

Note: For ENG REVERSER SNSR R status message displayed, the airplane must also be dispatched using MEL Item 78-31-01 for the right thrust reverser.

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MAINTENANCE NOTE

1. RDCs are interchangeable.

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42-21-02 Remote Data Concentrators (RDCs)

42-21-02-03 RDCs 5-18, 21, 23

Interval	Installed	Required	Procedure
C	16	15	**(P)**

May be dispatched with CCS RDC FAULT provided:
a. Remaining RDCs operate normally.

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MAINTENANCE NOTE

1. RDCs are interchangeable.

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42-21-02 Remote Data Concentrators (RDCs)

42-21-02-04 RDC 19

42-21-02-04A **RDC 19 Fault**

Interval	Installed	Required	Procedure
C	1	0	**(P)**

May be dispatched with CCS RDC FAULT provided:
a. Remaining RDCs operate normally.

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42-21-02 **Remote Data Concentrators (RDCs)**
42-21-02-04 **RDC 19**

42-21-02-04B **RDC 19 Inoperative**

Interval	Installed	Required	Procedure
C	1	0	**(M) (O) (P)**

May be inoperative deactivated provided:

a. Remaining RDCs operate normally.

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Note: 1. See Operations Procedure (O) for inoperative functions.
2. The airplane must also be dispatched using MEL items 32-08-01-05, 33-31-01, 25-63-01, and 33-21-01.

MAINTENANCE (M)

Note: RDCs are interchangeable.

Deactivate RDC 19 (AMM DDG 42-21-02).

1. Using a flight deck multi-function display only, open the following circuit breakers and lock with an INOP tag:
   - RDC-AFT EE BAY NE PRI
   - RDC-AFT EE BAY NE SEC

OPERATIONS (O)

For RDC 19 inoperative, the following functions will be inoperative:

1. One set of redundant databuses for PSDC 2, 3, 4, and 5. Status messages PSDC 2 DATABUS, PSDC 3 DATABUS, PSDC 4 DATABUS and PSDC 5 DATABUS will be displayed. The airplane must also be dispatched using MEL item 32-08-01-05.
2. Several service area light switches. The airplane must also be dispatched using MEL item 33-31-01, as appropriate for the following items:
   A. One of two lighting control switches for AFT EE Bay Service Lights. The AFT EE Bay Lights may be controlled by the other switch (connected to RDC 8).
   B. Lighting control switch for Main Landing Gear Wheel Well lights.
   C. Lighting control switch for Right ECS service compartment lights.
3. Emergency evacuation signal system operation not available from attendant panel at Door 4. The airplane must also be dispatched using MEL item 25-63-01.
4. Attendant work lights in area of Door 3. The airplane must also be dispatched using MEL item 33-21-01.
5. SATCOM functions cannot be accessed using the center tuning and control panel.

Table of Contents

ATA 44 CABIN SYSTEMS ATA 44-1
Table Of Contents ATA 44-1
44-11-01 Cabin Attendant Panels (CAP) ATA 44-3
44-12-01 Passenger Address System ATA 44-4
  44-12-01-01 Lavatory Speakers ATA 44-5
    44-12-01-01-01 787-8 ATA 44-5
    44-12-01-01-02 787-9 ATA 44-6
  44-12-01-02 Cabin Speakers ATA 44-7
    44-12-01-02A Inoperative Speakers Not Adjacent ATA 44-7
      44-12-01-02A-01 787-8 ATA 44-7
      44-12-01-02A-02 787-9 ATA 44-8
    44-12-01-02B Inoperative Speakers Adjacent ATA 44-9
      44-12-01-02B-01 787-8 ATA 44-9
      44-12-01-02B-02 787-9 ATA 44-10
44-12-02 Prerecorded Passenger Announcement System ATA 44-11
  44-12-02B Procedures Do Not Require Its Use ATA 44-11
44-14-01 Cabin Interphone Systems ATA 44-12
  44-14-01-01 Flight Deck to Cabin, Cabin to Flight Deck Functions ATA 44-12
  44-14-01-02 Cabin to Cabin Functions ATA 44-13
  44-14-01-03 Flight Deck to Ground/Ground to Flight Deck Function (Includes Nose Gear Flight Interphone Jack) ATA 44-14
    44-14-01-03A Nose gear Service Interphone Jack Operates Normally ATA 44-14
    44-14-01-03B Nose Gear Service Interphone Jack Inoperative ATA 44-15
44-14-02 Cabin Interphone Alerting Systems ATA 44-16
  44-14-02-01 EICAS Communication Alert Message System ATA 44-16
  44-14-02-02 EICAS Communication Alert Chime ATA 44-17
  44-14-02-03 Flight Attendant Call Light ATA 44-18
  44-14-02-04 Cabin Chime ATA 44-19
  44-14-02-05 OFCR/OFAR Call Light/Chime System ATA 44-20

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44-14-03 Cabin Interphone Handset Systems ATA 44-21
  44-14-03-01 Flight Deck ATA 44-21
    44-14-03-01A Procedures Require Use ATA 44-21
    44-14-03-01B Procedures Do Not Require Its Use ATA 44-22
  44-14-03-02 Cabin ATA 44-23
  44-14-03-03 OFCR/OFAR ATA 44-24
44-43-01 Ground Crew Call System ATA 44-25

44-11-01 Cabin Attendant Panels (CAP)

Interval	Installed	Required	Procedure
C	3	1	**(M) (P)**

May be inoperative deactivated.

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MAINTENANCE (M)

Deactivate inoperative cabin attendant panel (AMM DDG 44-11-01).

1. For CAP inoperative at door 1:
   A. Using a flight deck multi-function display only, open the AREA CTRL PNL-DR 1 circuit breaker and lock with an INOP tag.
2. For CAP inoperative at door 2:
   A. Using a flight deck multi-function display only, open the AREA CTRL PNL-DR 2 circuit breaker and lock with an INOP tag.
3. For CAP inoperative at door 4:
   A. Using a flight deck multi-function display only, open the AREA CTRL PNL-DR 4 circuit breaker and lock with an INOP tag.

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44-12-01 Passenger Address System

Interval	Installed	Required	Procedure
B	1	0	**(O) (P)**

May be inoperative provided:
a. Flight attendant call lights operate normally.
b. Both megaphones are operative.
Note: Any function that operates normally may be used.

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OPERATIONS (O)

1. P-i-C shall establish an appropriate alternative communication based on the use of the cabin/service interphone system for normal and all remaining available communication system for emergency procedures in order to be able to comply with the required normal and emergency operations.
2. Prior to flight, the P-i-C must brief cabin crew members using the cabin/ service Interphone system instead of the PA system.

44-12-01 Passenger Address System

44-12-01-01 Lavatory Speakers

44-12-01-01-01 **787-8** **TQA to TQF**

Interval	Installed	Required	Procedure
C	8	–	(O) (P)

OPERATIONS (O)

1. Prior to flight, the P-i-C must brief cabin crew members in order to be able to communicate/order passenger in lavatory and remind restriction of using lavatory.
2. Prior to use of those lavatories, cabin crew members should brief the lavatory occupant(s)/passengers to leave the lavatory when someone knocking at the door for three times and twice.

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44-12-01 **Passenger Address System**
44-12-01-01 **Lavatory Speakers**
44-12-01-01-02 **787-9** **TWA to TWB**

Interval	Installed	Required	Procedure
C	9	–	(O) (P)

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OPERATIONS (O)

1. Prior to flight, the P-i-C must brief cabin crew members in order to be able to communicate/order passenger in lavatory and remind restriction of using lavatory.
2. Prior to use of those lavatories, cabin crew members should brief the lavatory occupant(s)/passengers to leave the lavatory when someone knocking at the door for three times and twice.

44-12-01 Passenger Address System

44-12-01-02 Cabin Speakers

44-12-01-02A Inoperative Speakers Not Adjacent

44-12-01-02A-01 **787-8** **TQA to TQF**

Interval	Installed	Required	Procedure
C	45	–	**(M) (P)**

May be inoperative provided inoperative speakers are not adjacent to each other.

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MAINTENANCE (M)

Note: Certain cabin speaker drive module faults may result in PASSENGER ADDRESS status message being displayed when the associated speakers operate normally.

44-12-01 **Passenger Address System**
44-12-01-02 **Cabin Speakers**
44-12-01-02A **Inoperative Speakers Not Adjacent**

44-12-01-02A-02 **787-9** **TWA to TWB**

Interval	Installed	Required	Procedure
C	53	–	**(M) (P)**

May be inoperative provided inoperative speakers are not adjacent to each other.

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MAINTENANCE (M)

Note: Certain cabin speaker drive module faults may result in PASSENGER ADDRESS status message being displayed when the associated speakers operate normally.

44-12-01 **Passenger Address System**
44-12-01-02 **Cabin Speakers**
44-12-01-02B **Inoperative Speakers Adjacent**

44-12-01-02B-01 **787-8** **TQA to TQF**

Interval	Installed	Required	Procedure
C	45	–	**(M) (P)**

No passenger seat, cabin attendant seat or crew rest area bunk may be occupied from which passenger address system is not audible and intelligible; seat must be blocked and placarded “DO NOT OCCUPY”

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MAINTENANCE (M)

Note: Certain cabin speaker drive module faults may result in PASSENGER ADDRESS status message being displayed when the associated speakers operate normally.

Affected seats must be blocked and placarded “DO NOT OCCUPY” (AMM DDG 44-12-01).

44-12-01 **Passenger Address System**
44-12-01-02 **Cabin Speakers**
44-12-01-02B **Inoperative Speakers Adjacent**

44-12-01-02B-02 **787-9** **TWA to TWB**

Interval	Installed	Required	Procedure
C	53	–	**(M) (P)**

No passenger seat, cabin attendant seat or crew rest area bunk may be occupied from which passenger address system is not audible and intelligible; seat must be blocked and placarded “DO NOT OCCUPY”

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MAINTENANCE (M)

Note: Certain cabin speaker drive module faults may result in PASSENGER ADDRESS status message being displayed when the associated speakers operate normally.

Affected seats must be blocked and placarded “DO NOT OCCUPY” (AMM DDG 44-12-01).

44-12-02 Prerecorded Passenger Announcement System

44-12-02B Procedures Do Not Require Its Use

Interval	Installed	Required	Procedure
D	1	0	**(P)**

May be inoperative provided:

a. Procedures do not require its use.

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44-14-01 Cabin Interphone Systems

44-14-01-01 Flight Deck to Cabin, Cabin to Flight Deck Functions

Interval	Installed	Required	Procedure
B	9	5	**(O) (P)**

May be inoperative provided:

a. Flight deck to cabin and cabin to flight deck interphone functions operate normally on at least 50% of the cabin handsets.

b. Flight deck to cabin and cabin to flight deck interphone functions operate normally on at least one handset at each pair of exit doors.

Note: Any function that operates normally may be used.

OPERATIONS (O)

Note: For cabin interphone equipment associated with the observer seats, the airplane must be dispatched using MEL item 25-11-02.

1. Prior to flight, the P-i-C must brief cabin crew members on the alternate emergency procedures that will be used.
2. Use PA to establish communications with cabin crew members.

44-14-01 **Cabin Interphone Systems**

44-14-01-02 **Cabin to Cabin Functions**

Interval	Installed	Required	Procedure
B	9	5	**(O) (P)**

May be inoperative provided:

a. Cabin to cabin interphone functions operate normally on at least 50% of the cabin handsets.

b. Cabin to cabin interphone functions operate normally on at least one handset at each pair of exit doors.

Note: Any function that operates normally may be used.

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OPERATIONS (O)

1. Prior to flight, the P-i-C must brief cabin crew members on the alternate emergency procedures that will be used.
2. Use PA to establish communications with cabin crew members.

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44-14-01 Cabin Interphone Systems

44-14-01-03 Flight Deck to Ground/Ground to Flight Deck Function (Includes Nose Gear Flight Interphone Jack)

44-14-01-03A Nose gear Service Interphone Jack Operates Normally

Interval	Installed	Required	Procedure
C	1	0	**(O) (P)**

May be inoperative provided:

a. Nose gear service interphone jack operates normally.

* * *

OPERATIONS (O)

1. Use flight interphone for communication with ground crew.
   Position Overhead panel SERV INTPH switch ON to connect service and flight interphone systems.

44-14-01 **Cabin Interphone Systems**

44-14-01-03 **Flight Deck to Ground/Ground to Flight Deck Function (Includes Nose Gear Flight Interphone Jack)**

44-14-01-03B **Nose Gear Service Interphone Jack Inoperative**

Interval	Installed	Required	Procedure
B	1	0	**(O) (P)**

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OPERATIONS (O)

1. Use hand signals for communication with ground crew. These procedures may include any kind of 2-way handheld radio communication, i.e. walkie talkie, mobile phone.

44-14-02 Cabin Interphone Alerting Systems

44-14-02-01 EICAS Communication Alert Message System

Interval	Installed	Required	Procedure
B	1	0	**(P)**

May be inoperative provided:

a. The EICAS communication alert chime operates normally.

b. Alternate procedures are established and used to differentiate between normal and emergency calls.

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44-14-02 Cabin Interphone Alerting Systems

44-14-02-02 EICAS Communication Alert Chime

Interval	Installed	Required	Procedure
B	1	0	**(O) (P)**

May be inoperative provided:

a. EICAS communication alert message system operates normally.

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OPERATIONS (O)

1. Use flight deck visual alerting system instead of flight deck call audio alerting system.

44-14-02 Cabin Interphone Alerting Systems

44-14-02-03 Flight Attendant Call Light

Interval	Installed	Required	Procedure
B	11	0	**(O) (P)**

May be inoperative provided:

a. PA system operates normally.

Note: 1. Passenger to attendant call system is considered a GMM item.

2. Any flight attendant call light function that operates normally may be used.

* * *

OPERATIONS (O)

1. Use PA to establish communications with cabin crew members.

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44-14-02 Cabin Interphone Alerting Systems

44-14-02-04 Cabin Chime

Interval	Installed	Required	Procedure
B	1	0	**(O) (P)**

May be inoperative provided:

a. Flight attendant visual alerting system operates normally.

Note: 1. Passenger to attendant call system is considered a GMM item.

2. Any cabin chime system function that operates normally may be used.

OPERATIONS (O)

1. Use flight attendant visual alerting system to establish communications with cabin crew members

44-14-02 **Cabin Interphone Alerting Systems**

44-14-02-05 **OFCR/OFAR Call Light/Chime System**

Interval	Installed	Required	Procedure
B	–	0	**(O) (P)**

May be inoperative provided:

a. Associated OFCR or OFAR cabin interphone handset system operates normally.

Note: Any alerting system function that operates normally may be used.

* * *

OPERATIONS (O)

1. Use PA to establish communication with crew rest occupants.

44-14-03 Cabin Interphone Handset Systems

44-14-03-01 Flight Deck

44-14-03-01A Procedures Require Use

Interval	Installed	Required	Procedure
C	1	0	**(O) (P)**

May be inoperative provided:

a. Flight deck to cabin communication operates normally.

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OPERATIONS (O)

1. Use headset boom microphone/hand microphone for communication with cabin crew.

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44-14-03 **Cabin Interphone Handset Systems**
44-14-03-01 **Flight Deck**

44-14-03-01B **Procedures Do Not Require Its Use**

Interval	Installed	Required	Procedure
D	1	0	**(P)**

May be inoperative provided:
a. Procedures do not require its use.

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44-14-03 **Cabin Interphone Handset Systems**

44-14-03-02 **Cabin**

Interval	Installed	Required	Procedure
B	9	5	**(O) (P)**

May be inoperative provided:

a. At least 50% of cabin handsets operate normally.

b. One handset must operate normally at each pair of exit doors.

Note: 1. An operative handset at an inoperative flight attendant seat shall not be counted to satisfy the 50% requirement.

2. Any handset functions that operate normally may be used.

OPERATIONS (O)

1. Before flight, cabin crew should be informed about the status of the inoperative handsets.
2. Use the operative handset at each pair of exit doors for communications with cabin crew members.

44-14-03 **Cabin Interphone Handset Systems**

44-14-03-03 **OFCR/OFAR**

Interval	Installed	Required	Procedure
C	4	0	**(O) (P)**

May be inoperative provided:

a. Flight deck to cabin communication operates normally.

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OPERATIONS (O)

1. Before flight, flight crew and cabin crew should be informed.
2. Use PA to establish communications with flight crew and cabin crew.

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44-43-01 Ground Crew Call System

Interval	Installed	Required	Procedure
C	1	0	**(O) (P)**

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OPERATIONS (O)

Note: An inoperative ground crew call horn will not annunciate loss of Forward and Aft E/E Cooling, APU fire, or Inertial Reference System operating on battery power.

1. Monitor the operation of Forward and Aft E/E Cooling system in the flight deck and make sure the EICAS message EQUIP COOLING AFT and EQUIP COOLING FWD does not appear.
2. Monitor the operation of APU in the flight deck and make sure the EICAS message FIRE APU does not appear.
3. Ensure the Inertial Reference System is not operating on DC power.
4. Communicate with ground crew during ground operations to ensure corrective actions can be made in case of E/E Cooling system failure.

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Table of Contents

ATA 45 **CENTRAL MAINTENANCE COMPUTER** .... **ATA 45-1**
Table Of Contents .... **ATA 45-1**
45-11-01 **Central Maintenance Computing Functions (CMCF)** .... **ATA 45-2**
45-12-01 **Airplane Condition Monitoring Function (ACMF)** .... **ATA 45-3**

45-11-01 Central Maintenance Computing Functions (CMCF)

Interval	Installed	Required	Procedure
C	2	0	**(P)**

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45-12-01 Airplane Condition Monitoring Function (ACMF)

Interval	Installed	Required	Procedure
D	1	0	**(P)**

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Table of Contents

ATA 46 INFORMATION SYSTEMS . . . . . . ATA 46-1
Table Of Contents . . . . . . ATA 46-1
46-11-01 Electronic Flight Bag (EFB) Systems . . . . . . ATA 46-2
  46-11-01-01 EFB System (Installed EFB System) . . . . . . ATA 46-2
    46-11-01-01A Alternate Procedures Required . . . . . . ATA 46-2
    46-11-01-01B Procedures Do Not Require Use . . . . . . ATA 46-3
46-12-01 Core Network System . . . . . . ATA 46-4

46-11-01 Electronic Flight Bag (EFB) Systems

46-11-01-01 EFB System (Installed EFB System)

46-11-01-01A Alternate Procedures Required

Interval	Installed	Required	Procedure
C	2	1	**(O) (P)**

Note:
1. Any function, program or document which operates normally may be used.
2. Refer to Chapter OI in QRH for EFB Failure and Solution.

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OPERATIONS (O)

1. Use backup paper document or iPad when the EFB system, some function or document are inoperative.

46-11-01 Electronic Flight Bag (EFB) Systems
46-11-01-01 EFB System (Installed EFB System)
46-11-01-01B Procedures Do Not Require Use

Interval	Installed	Required	Procedure
D	2	0	**(P)**

May be inoperative provided:

a. Procedures do not require its use.

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46-12-01 Core Network System

Interval	Installed	Required	Procedure
C	1	0	**(P)**

Note: Any function that operates normally may be used.

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MAINTENANCE NOTE

The Core Network System consists of the Network Interface Module (NIM), Ethernet Gateway Module (EGM), Controller Server Module (CSM), Crew information system / maintenance system (CIS/MS), Airline File Server Modules (FSM), hosted applications, and the core network cabinet.

An inoperative core network system or supporting component may render one or more of the following functions inoperative:

1. Maintenance laptop interfaces (both wired and wireless) to:
    - System Maintenance Pages
    - Synoptics
    - Circuit breakers
    - Central Maintenance Computing Function (CMCF)

    Note: The above functions can still be accessed via Flight Deck Multi-Function Displays.

    - e-Logbook

      Note: The e-Logbook can still be accessed directly via the Electronic Flight Bags.

    - Airplane Condition Monitoring Function (ACMF)
    - IFE maintenance screens
    - CSS maintenance screens
2. All software and database data load functions.
3. Broadband off-board communication or wireless gatelink:
    - Upload of parts via Boeing Electronic Distribution of Software (BEDS)
    - Download of recorded data (ACMF, engine, etc.) via BEDS
    - Upload & download of EFB data (charts, logbook data, airport database, etc.). The airplane must be dispatched using MEL item 46-11-01.
4. Core Network quick access recorder functions.
5. Onboard maintenance information, if hosted on the Core Network.
6. Airport map function. The airplane must be dispatched using MEL item 31-61-13.
7. Flight deck printer (except via either EFB). The airplane must be dispatched using MEL item 31-33-01.
8. Flight deck door video surveillance. The airplane must be dispatched using MEL item 23-75-01.

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OPERATIONS NOTE

An inoperative Core Network System or supporting component may render the following functions inoperative:

1. ACARS communication to or from the EFBs. Manual entry of preflight EFB and/or Flight Management Function inputs may be required.
2. Airport map function.
3. Flight deck printer (except via either EFB)
4. Flight deck door video surveillance.

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Table of Contents

ATA 47 **NITROGEN GENERATION SYSTEM** . . . . . . **ATA 47-1**
Table Of Contents . . . . . . **ATA 47-1**
47-11-01 **Nitrogen Generation System (NGS)** . . . . . . **ATA 47-2**
  47-11-01-01 **Nitrogen Generation Performance** . . . . . . **ATA 47-2**
  47-11-01-02 **Ground Cooling Valve** . . . . . . **ATA 47-3**
  47-11-01-03 **Cabin Shutoff Valve** . . . . . . **ATA 47-4**

47-11-01 Nitrogen Generation System (NGS)

47-11-01-01 Nitrogen Generation Performance

Interval	Installed	Required	Procedure
A	1	0	**(P)**

May be inoperative provided:

1. Repairs are made within 10 flight days.

* * *

47-11-01 Nitrogen Generation System (NGS)

47-11-01-02 Ground Cooling Valve

Interval	Installed	Required	Procedure
A	1	0	**(M) (P)**

May be inoperative provided:

a. Ground cooling valve is deactivated closed.

b. Repairs are made within 10 flight days.

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MAINTENANCE (M)

Deactivate ground cooling valve closed (AMM DDG 47-11-01).

1. Using a flight deck multi-function display only, open the following circuit breakers and lock with an INOP tag.
    - NGS ACTR SOV
    - ACTR-GND MOT CLG

    Note: The NITROGEN GEN GND CLG VLV, NITROGEN GEN SOV and/or NITROGEN GENERATION SYS status messages may display depending on whether the system was operating when the circuit breaker was opened.
2. Close the ground cooling door using the manual valve actuator controller on the 192MR panel.

47-11-01 **Nitrogen Generation System (NGS)**

47-11-01-03 **Cabin Shutoff Valve**

Interval	Installed	Required	Procedure
A	1	0	**(M) (P)**

May be inoperative provided:

a. NGS cabin shutoff valve is deactivated closed.

b. Repairs are made within 10 flight days.

MAINTENANCE (M)

Deactivate ground cooling valve closed (AMM DDG 47-11-01).

1. Using a flight deck multi-function display only, open circuit breaker NGS ACTR SOV and lock with an INOP tag.

   Note: The NITROGEN GEN SOV and/or NITROGEN GENERATION SYS status messages may display depending on whether the system was operating when the circuit breaker was opened.

2. Gain access to NGS cabin shutoff valve.
3. Manually close the cabin shutoff valve.

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Table of Contents

ATA 49 AIRBORNE AUXILIARY POWER . . . . . ATA 49-1
Table Of Contents . . . . . ATA 49-1
49-11-01 Auxiliary Power Unit (APU) . . . . . ATA 49-2
49-15-01 APU Air Inlet Door Actuation System . . . . . ATA 49-3
  49-15-01A APU Not Required For Flight . . . . . ATA 49-3
  49-15-01B APU Available . . . . . ATA 49-4
  49-15-01-01 APU Air Inlet Door Actuator Position Indication Switch . . . . . ATA 49-6
49-41-01 APU Starting System . . . . . ATA 49-7
  49-41-01A APU Required For Flight . . . . . ATA 49-7
  49-41-01B APU Not Required For Flight . . . . . ATA 49-8
49-61-01 APU Controller . . . . . ATA 49-9
49-61-02 APU Ground Control Panel . . . . . ATA 49-10
49-70-01 APU FAULT Light . . . . . ATA 49-11
49-71-01 APU EGT Indication . . . . . ATA 49-12
49-73-01 APU RPM Indication . . . . . ATA 49-13
49-94-01 APU Oil Quantity Indication System . . . . . ATA 49-14
  49-94-01A APU Available . . . . . ATA 49-14
  49-94-01B APU Not Used . . . . . ATA 49-15
49-94-02 APU Oil Pressure Indication . . . . . ATA 49-16

49-11-01 Auxiliary Power Unit (APU)

Interval	Installed	Required	Procedure
C	1	0	**(O) (P) (MV)**

May be inoperative provided:

a. Left AGCU operates normally.
b. VFSG systems operate normally.
c. Flight remains within 180 minutes of landing at a suitable airport.

MAINTENANCE NOTE

1. A VFSG system is considered to be operating normally if its associated status message (ELEC GEN SYS L1, L2, R1 or R2) is not displayed.
2. If desired, the APU may be deactivated by opening and collaring P49 panel circuit breakers APUC-1, ACTR-APU INLET DR, and APU FUEL CTRL.
3. The APU may be removed by installing dispatch tool K49003.
4. Ground Power Engine Start is not allowed if either associated ELEC ENGINE STARTER status message is displayed.

OPERATIONS (O)

1. Flight must remain within 180 minutes of landing at a suitable airport.
2. Start the first engine using the Ground Power Engine Start Supplementary Procedure. Ground Power Engine Start is not allowed if either associated ELEC ENGINE STARTER status message is displayed.

49-15-01 APU Air Inlet Door Actuation System

49-15-01A APU Not Required For Flight

Interval	Installed	Required	Procedure
C	1	0	**(O) (P) (MV)**

May be inoperative provided:
a. Left AGCU operates normally.
b. VFSG systems operate normally.
c. Flight remains within 180 minutes of landing at a suitable airport.

MAINTENANCE NOTE

1. A VFSG system is considered to be operating normally if its associated status message (ELEC GEN SYS L1, L2, R1 or R2) is not displayed.

OPERATIONS (O)

1. Reduce performance limited weights as follows for APU inlet door not closed with APU not running:
   For 787-8: **TQA to TQF**

Takeoff	Approach & Landing Climb	Enroute Climb
1,678 kg	680 kg	1,814 kg

Note: The enroute climb weight penalties are based on single engine operating speeds that approximate maximum lift-to-drag ratio speed. To account for the difference in level-off altitude when operating at other speeds, multiply the enroute climb weight penalty listed above by the appropriate factor listed on page 3.00-01-00.2 in the ENROUTE DIVERSION SPEED EFFECTS paragraph.

2. Reduce performance limited weights as follows for APU inlet door not closed with APU not running:
   For 787-9: **TWA to TWB**

Takeoff	Approach & Landing Climb	Enroute Climb
2,495 kg	544 kg	2,087 kg

Note: The enroute climb weight penalties are based on single engine operating speeds that approximate maximum lift-to-drag ratio speed. To account for the difference in level-off altitude when operating at other speeds, multiply the enroute climb weight penalty listed above by the appropriate factor listed on page 3.00-01-00.2 in the ENROUTE DIVERSION SPEED EFFECTS paragraph.

3. For APU inlet door not closed with APU not running, increase flight planning fuel by either using an airplane drag correction factor of 2.5% or increase the flight planning fuel by 2.9%.
4. Flight must remain within 180 minutes of landing at a suitable airport.
5. Start the first engine using the Ground Power Engine Start Supplementary Procedure.

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49-15-01 APU Air Inlet Door Actuation System

49-15-01B APU Available

Interval	Installed	Required	Procedure
C	1	0	**(M) (O) (P) (MV)**

May be inoperative provided:
a. Door is deactivated in the inflight open position.

MAINTENANCE (M)

Manually position and deactivate the door in the inflight open position (AMM DDG 49-15-01).

1. Set P5 panel APU selector OFF.
2. Open the P49 panel APUC-1 circuit breaker.
3. Open the P300 panel FIRE EXT BOTTLE-APU and APU REMOTE FIRE IND AUTO DISCH ARM circuit breakers.
4. Using a flight deck multi-function display only, open circuit breaker APU DC PUMP and lock with an INOP tag.
5. Open and collar the P49 panel ACTR-APU INLET DR circuit breaker.
6. Gain access to the inlet door actuator.
7. Turn the transfer flag socket counter clockwise until the manual drive socket shows.
8. Turn the manual drive socket counter clockwise until the torque value suddenly increases.
9. Turn the manual drive socket clockwise approximately 7.5 turns.
10. Turn the transfer flag socket clockwise until E shows.
11. Close the P49 panel APUC-1 circuit breaker.
12. Close the P300 panel FIRE EXT BOTTLE-APU and APU REMOTE FIRE IND AUTO DISCH ARM circuit breakers.
13. Using a flight deck multi-function display only, close circuit breaker APU DC PUMP.

OPERATIONS (O)

1. Reduce performance limited weights as follows for APU inlet door fully open with APU not running:
   For 787-8: **TQA to TQF**

Takeoff	Approach & Landing Climb	Enroute Climb
1,678 kg	680 kg	1,814 kg

Note: The enroute climb weight penalties are based on single engine operating speeds that approximate maximum lift-to-drag ratio speed. To account for the difference in level-off altitude when operating at other speeds, multiply the enroute climb weight penalty listed above by the appropriate factor listed on page 3.00-01-00.2 in the ENROUTE DIVERSION SPEED EFFECTS paragraph.

2. Reduce performance limited weights as follows for APU inlet door fully open with APU not running:
   For 787-9: **TWA to TWB**

Takeoff	Approach & Landing Climb	Enroute Climb
2,495 kg	544 kg	2,087 kg

Note: The enroute climb weight penalties are based on single engine operating speeds that approximate maximum lift-to-drag ratio speed. To account for the difference in level-off altitude when operating at other speeds, multiply the enroute climb weight penalty listed above by the appropriate factor listed on page 3.00-01-00.2 in the ENROUTE DIVERSION SPEED EFFECTS paragraph.

3. For APU inlet door not closed with APU not running, increase flight planning fuel by either using an airplane drag correction factor of 2.5% or increase the flight planning fuel by 2.9%.
4. For APU inlet door not closed with APU running, increase flight planning fuel by either using an airplane drag correction factor of 1.0% or increase the flight planning fuel by 1.2% plus 250 lb/hr of APU flight time and 480 lb/hr of APU ground time.

49-15-01 APU Air Inlet Door Actuation System

49-15-01-01 APU Air Inlet Door Actuator Position Indication Switch

Interval	Installed	Required	Procedure
C	1	0	**(M) (P)**

May be inoperative provided:

a. APU inlet door is verified to operate normally before each departure.

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MAINTENANCE (M)

Verify the APU door operates normally before each departure (AMM DDG 49-15-01).

1. For APU off:
   A. On APU maintenance page, confirm the APU DOOR POSITION indicates CLOSED.
   B. Set Electrical Panel (P5) APU selector ON.
   C. Wait 120 seconds and on APU maintenance page, confirm APU DOOR POSITION indicates OPEN.
   D. Set Electrical Panel (P5) APU selector OFF.
   E. Wait 120 seconds and on APU maintenance page, confirm APU DOOR POSITION indicates CLOSED.
2. For APU on:
   A. On APU maintenance page, confirm the APU DOOR POSITION indicates OPEN.
   B. Set Electrical Panel (P5) APU selector OFF.
   C. Wait 120 seconds and on APU maintenance page, confirm APU DOOR POSITION indicates CLOSED.
   D. Start the APU.
   E. Wait 120 seconds and on APU maintenance page, confirm APU DOOR POSITION indicates OPEN.

49-41-01 APU Starting System

49-41-01A APU Required For Flight

Interval	Installed	Required	Procedure
C	1	0	**(O) (P) (MV)**

May be dispatched with APU START SYS faults provided:
a. APU is started before departure.
b. Operated the APU continuously throughout the flight.

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OPERATIONS (O)

1. Increase flight planning fuel by either using an airplane drag correction factor of 1.0% or increase the flight planning fuel by 1.2% with APU running and also increase planning fuel by 114 kg per hour of APU usage inflight and 218 kg per hour of APU usage on the ground.
2. Start the APU before departure and operate the APU continuously throughout the flight.

49-41-01 **APU Starting System**

49-41-01B **APU Not Required For Flight**

Interval	Installed	Required	Procedure
C	1	0	**(P) (MV)**

May be dispatched with APU START SYS faults provided:

a. Left AGCU operates normally.

b. VFSG systems operate normally.

c. Flight remains within 180 minutes of landing at a suitable airport.

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MAINTENANCE NOTE

1. A VFSG system is considered to be operating normally if its associated status message (ELEC GEN SYS L1, L2, R1 or R2) is not displayed.

OPERATIONS NOTE

1. For APU not available for engine starting:
    A. Start the first engine using the Ground Power Engine Start Supplementary Procedure.

49-61-01 APU Controller

Interval	Installed	Required	Procedure
C	1	0	**(P)**

May be dispatched with APU CONTROL faults.

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49-61-02 APU Ground Control Panel

Interval	Installed	Required	Procedure
C	1	0	**(P)**

Note: Any function that operates normally may be used.

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MAINTENANCE NOTE

1. This MEL item allows dispatch with any or all of the APU ground control panel functions (APU fire warning light, APU fire bottle discharge switch, APU shutdown switch and APU fire bottle armed light) inoperative.

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49-70-01 APU FAULT Light

Interval	Installed	Required	Procedure
C	1	0	**(P)**

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49-71-01 APU EGT Indication

Interval	Installed	Required	Procedure
C	1	0	**(P)**

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49-73-01 APU RPM Indication

Interval	Installed	Required	Procedure
C	1	0	**(P)**

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49-94-01 APU Oil Quantity Indication System

49-94-01A APU Available

Interval	Installed	Required	Procedure
C	1	0	**(M) (P)**

May be inoperative provided:
a. APU oil quantity is verified adequate once each flight day.

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MAINTENANCE (M)

1. Verify the APU oil quantity is adequate once each flight day using the APU oil level sight glass (AMM DDG 49-94-01).

49-94-01 APU Oil Quantity Indication System

49-94-01B APU Not Used

Interval	Installed	Required	Procedure
C	1	0	**(P) (MV)**

May be inoperative provided:

a. Left AGCU operates normally.
b. VFSG systems operate normally.
c. APU is not used.
d. Flight remains within 180 minutes of landing at a suitable airport.

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MAINTENANCE NOTE

1. A VFSG system is considered to be operating normally if its associated status message (ELEC GEN SYS L1, L2, R1 or R2) is not displayed.

OPERATIONS NOTE

1. For APU not available for engine start, start the first engine using the Ground Power Engine Start Supplementary Procedure.

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49-94-02 APU Oil Pressure Indication

Interval	Installed	Required	Procedure
C	1	0	**(P)**

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Table of Contents

ATA 50 **CARGO & ACCESSORY COMPARTMENTS** . . . . **ATA 50-1**
Table Of Contents . . . . **ATA 50-1**
50-11-01 **Lower Cargo Compartment Linings** . . . . **ATA 50-2**
50-20-01 **Cargo Handling Systems** . . . . **ATA 50-3**
50-21-01 **Cargo Restraint Systems** . . . . **ATA 50-4**
  50-21-01A **Cargo Compartment Used** . . . . **ATA 50-4**
  50-21-01B **Cargo Compartment Remains Empty** . . . . **ATA 50-5**
  50-21-01C **Individual Cargo Areas** . . . . **ATA 50-6**

50-11-01 Lower Cargo Compartment Linings

Interval	Installed	Required	Procedure
C	–	–	**(O) (P)**

May be inoperative provided:

a. Cargo compartments must remain empty, except for ballast, empty cargo containers (ballast may be loaded in ULDs), fly away kits, pallets, and cargo restraint components.

Note: 1. Landing gear tires, cans of hydraulic oil, cleaning solvents, or any item(s) that may be potential sources of smoke, fume, or fire must be removed from Airborne Maintenance Kit (AMK).

2. Dry shingle, coarse round gravel or pebbles can be used as ballast.

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Note: Cargo compartment linings include: vertical and sloping sidewall panels; endwall panels; ceiling panels and ceiling equipment support trays; doorway access panels; cargo door panels; decompression door panels; floor panels; equipment and structure enclosures; insulation installed between linings and airframe or other systems; fasteners attaching linings that are above the floor level; tape sealing liner edges; and bilge endwall/barrier and fire barrier.

OPERATIONS (O)

1. The associated cargo compartment must remain empty, except for ballast, empty cargo containers (ballast may be loaded in ULDs), fly away kits, pallets, and cargo restraint components.

   Note: Both the aft and bulk cargo compartments must remain empty, except for the listed items, when there are damaged or missing linings in either the aft or the bulk cargo compartment.

50-20-01 Cargo Handling Systems

Interval	Installed	Required	Procedure
D	2	0	**(P)**

May be inoperative or portions of the system may be missing.

Note: Any portion of the system which operates normally may be used.

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MAINTENANCE NOTE

1. Manual operation features of the cargo handling system allow loading and unloading of ULDs when electrical components are inoperative.
2. Open holes in the ball mats where Power Drive Units (PDUs) have been removed should be covered to avoid injury to cargo handlers. For structural damage to the ball mats (e.g., cracks, nicks, scratches, gouges, corrosion, dents, holes and punctures), refer to the Structural Repair Manual (SRM).

50-21-01 Cargo Restraint Systems

50-21-01A Cargo Compartment Used

Interval	Installed	Required	Procedure
A	–	–	**(M) (P) (MV)**

May be inoperative or missing provided:

a. Approved cargo-loading limits are observed. The only source documents are:
  - Type Certificate (TC).
  - Supplemental Type Certificate (STC).
  - Airplane Flight Manual (AFM).
  - Airplane Flight Manual Supplement (AFMS).
  - TC/STC Weight and Balance Manual (WBM).

b. Repairs are made within 120 consecutive calendar-days.

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MAINTENANCE (M)

Refer to the Weight and Balance Control and Loading Manual for cargo loading limits.

Note:
1. The cargo handling system side guide rails, L/R BL 3, 21 and 39 roller trays and doorway trays, and BL 0 ball mats must be installed to stabilize the cargo floor beams and frames inflight.
2. The barrier net separating the aft and bulk cargo compartments is considered a cargo restraint component.
3. The door protector net in the bulk cargo compartment must be installed to keep shifted cargo from interfering with the operation of the sidewall decompression vent and with the operation of the cargo door.

50-21-01 Cargo Restraint Systems

50-21-01B Cargo Compartment Remains Empty

Interval	Installed	Required	Procedure
A	–	–	**(P) (MV)**

May be inoperative or missing provided:

a. Cargo compartment remains empty.

b. Repairs are made within 120 consecutive calendar-days.

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50-21-01 Cargo Restraint Systems

50-21-01C Individual Cargo Areas

Interval	Installed	Required	Procedure
A	–	–	

Individual cargo areas may be inoperative provided:

a. Aircraft is operated in accordance with Original Equipment Manufacturer (OEM) W&B source document.

b. Repairs are made within 120 consecutive calendar-days.

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Table of Contents

ATA 52 DOORS ATA 52-1
Table Of Contents ATA 52-1
52-00-01 Doors Synoptic Display ATA 52-3
52-11-01 Passenger Entry Doors/Slides ATA 52-4
  52-11-01A Passengers Carried ATA 52-4
  52-11-01B No Passengers Carried ATA 52-6
52-11-02 Passenger Entry Doors Pressure Stop Assemblies ATA 52-7
  52-11-02-01 Door Stops 1, 2, 5, and 6 ATA 52-7
  52-11-02-02 Door Stops 3 and 4 ATA 52-10
52-11-03 Passenger Entry Doors Hold-Open Mechanisms ATA 52-11
52-11-04 Passenger Entry Doors Hold-Open Release Handles ATA 52-12
52-11-05 Passenger Entry Door Flight Lock Systems ATA 52-13
52-11-06 EPAS Power Channels ATA 52-14
52-11-07 EPAS Disarmed Sensors ATA 52-15
52-11-07 EPAS Disarmed Sensors ATA 52-16
  52-11-07-01 Passenger Door Manual Mode Indicators (Including Door 1L Attendant Switch Panel Indicator) ATA 52-16
52-11-08 Passenger Door Automatic Mode Indicators (Including Door 1L Attendant Switch Panel Indicator) ATA 52-17
52-34-01 Forward Cargo Door Lift/Latch System (Electric And Manual Modes) ATA 52-18
  52-34-01A One Mode Inoperative ATA 52-18
  52-34-01B Both Modes Inoperative ATA 52-19
52-34-02 Forward Cargo Door Control Panel Lights (FULL OPEN, READY TO LOCK, CLOSED & LOCKED ATA 52-20
52-35-01 Aft Cargo Door Lift/Latch System (Electric And Manual Modes) ATA 52-21
  52-35-01A One Mode Inoperative ATA 52-21
  52-35-01B Both Modes Inoperative ATA 52-22

52-35-02 Aft Cargo Door Control Panel Lights (FULL OPEN, READY TO LOCK, CLOSED & LOCKED) ATA 52-23
52-36-01 Bulk Cargo Door Gas Spring ATA 52-24
52-36-02 Bulk Cargo Door Damper ATA 52-25
52-36-03 Bulk Cargo Door Exterior Handle ATA 52-26
52-51-01 Flight Deck Door Automatic Locking System ATA 52-27
  52-51-01-02 Flight Deck Door Automatic Locking System ATA 52-27
    52-51-01-02A Passenger Allowed ATA 52-27
    52-51-01-02B Passengers Not Allowed ATA 52-28
    52-51-01-02-01 Flight Deck Access System ATA 52-29
      52-51-01-02-01-01 LEDs ATA 52-30
      52-51-01-02-01-02 Door Bell Mode ATA 52-31
      52-51-01-02-01-03 Keypad Channels ATA 52-32
    52-51-01-02-02 Flight Deck Door Access Selector ATA 52-33
    52-51-01-02-03 FD DOOR LOCK FAIL Indication ATA 52-34
    52-51-01-02-04 FD DOOR AUTO UNLK Indication ATA 52-35
    52-51-01-02-05 FD DOOR OPEN Indication ATA 52-36
    52-51-01-02-06 Power Switch OFF Light ATA 52-37
    52-51-01-02-07 Power Switch ON Light ATA 52-38
52-51-02 Flight Deck Door Dead Bolt ATA 52-39
52-51-03 Flight Deck Door Decompression Panel Latch ATA 52-40
52-71-01 Door Indication Systems ATA 52-41
  52-71-01-01 Passenger Door Locked Indication Light ATA 52-44

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52-00-01 Doors Synoptic Display

Interval	Installed	Required	Procedure
C	1	0	**(P)**

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OPERATIONS NOTE

1. For missing data on the Synoptic Display, selecting an alternate location for the display (Captain's Inboard, First Officer's Inboard, or Lower) may restore the missing data. Synoptic Displays containing missing data may continue to be used to the extent remaining data is useful. Airplane system faults will be annunciated by alerting and status messages.

52-11-01 Passenger Entry Doors/Slides

52-11-01A Passengers Carried

Interval	Installed	Required	Procedure
A	8	7	**(M) (O) (P) (MV)**

One may be inoperative or slide missing provided:

a. A conspicuous barrier strap or rope and a placard stating that the door is inoperative shall be placed across the inoperative door.

b. Emergency exit sign and floor proximity lights associated with the inoperative exit must be covered to obscure the sign and lights.

c. Conspicuous signs and placards shall be placed in appropriate locations to indicate seats are not to be occupied by passengers.

d. All other passenger entry doors are fully operational.

e. All passenger seats halfway to the next exit in each direction from the inoperative door/slide, across the entire width of the airplane, shall be blocked off with conspicuous tapes or ropes that contrast with the airplane interior before loading passengers. Only the seats in these areas shall be blocked; main passenger aisles, cross aisles and exit areas must not be blocked. (For an inoperative forward door/slide, the blocked seating area shall extend from the forward cabin end, rearward to a line halfway between the inoperative forward door and the next set of doors aft of the inoperative one. For an inoperative rear door/slide, the blocked seating area shall extend forward from the aft cabin end to a line halfway between the inoperative door and the next set of doors forward of the inoperative one).

787-8 (OFCR and OFAR installed)			
Inoperative Door	**Blocked Row (Additional Blocked Seats)**	**No. of Blocked Seats**	**Remaining Seat Capacity**
1	11-12	12	10C/234Y
2	14-38	82	12C/162Y
3	39-52	114	22C/120Y
4	53-58	48	22C/186Y
787-9			
Inoperative Door	**Blocked Row (Additional Blocked Seats)**	**No. of Blocked Seats**	**Remaining Seat Capacity**
1	11-15	16	14C/268Y
2	16-38	86	16C/196Y
3	39-54	132	30C/136Y
4	55-62	64	30C/204Y

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f. For extended overwater operations, occupancy shall not exceed the normal rated capacity of the slide/rafts, or the remaining slide/rafts, or the rated overload capacity of the slide/rafts remaining after loss of one additional slide/raft of greatest capacity, whichever is least.
g. Passenger seats must be blocked according to Chapter SP (Loading) in FCOM and use evacuation procedures according to Chapter SP (Emergency) in FCOM.
h. Affected door is not used for passenger loading.
i. Passengers must be advised to not use affected door.
j. Repairs are made within one flight day.

Note: 1. Flight attendants may be stationed in the vicinity of each door within blocked areas.
2. Weight and Balance Manifest must be revised as necessary to ensure proper loading limits are observed.

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MAINTENANCE (M)

Configure the associated emergency exit sign, floor proximity escape path markings and passenger seats as appropriate (AMM DDG 52-11-01)

1. Cover the emergency exit sign unique to the inoperative door.
2. Cover the floor proximity escape path marking system lights unique to the inoperative door.
3. Block the inoperative door with a conspicuous barrier strap or rope and placard door INOPERATIVE—PLEASE DO NOT USE.
4. Block off the affected passenger seats with conspicuous tapes or ropes and placard seats INOPERATIVE—PLEASE DO NOT USE.

OPERATIONS (O)

1. Arming of the passenger entry doors using the mode select handles in the automatic position (red band) prior to taxi, takeoff and landing whenever passengers are carried includes the inoperative door with or without the escape slide removed.
2. Flight crew members and passengers must be briefed prior to takeoff and landing regarding the inoperative door that cannot be used for emergency evacuation.

52-11-01 Passenger Entry Doors/Slides

52-11-01B No Passengers Carried

Interval	Installed	Required	Procedure
C	8	4	(M) (O) (P) (MV)

May be inoperative or slide missing provided:

a. No passengers are carried.
b. A maximum of 19 persons authorized for non-passenger carrying operations are carried.
c. A conspicuous barrier strap or rope and a placard stating that the door is inoperative shall be placed across the inoperative door.
d. Emergency exit sign and floor proximity lights associated with the inoperative exit must be covered to obscure the sign and lights.
e. Inoperative doors are not used for loading.
f. Each person carried has unobstructed access from their seat to an operative door.
g. Safety briefing includes location of inoperative doors and instructions not to use them.

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MAINTENANCE (M)

Block the inoperative doors with conspicuous barrier strap or rope and placard as inoperative, configure the associated emergency exit signs and floor proximity escape path markings as appropriate (AMM DDG 52-11-01).

1. Block the inoperative doors with conspicuous barrier strap or rope and placard as inoperative.
2. Cover the emergency exit signs unique to the inoperative doors.
3. Cover the floor proximity escape path marking system lights unique to the inoperative doors.

OPERATIONS (O)

1. No passengers may be carried.
2. A maximum of 19 persons (crew member, company employee, or inspector performing official duties) may be carried.
3. Inoperative doors are not to be used for loading.
4. Flight crew must brief the occupants prior to takeoff and landing regarding the inoperative doors that cannot be used for emergency evacuation.
5. Arming of the passenger entry doors using the mode select handles in the automatic position (red band) prior to taxi, takeoff and landing includes the inoperative doors with or without the escape slide removed.

52-11-02 Passenger Entry Doors Pressure Stop Assemblies

52-11-02-01 Door Stops 1, 2, 5, and 6

Interval	Installed	Required	Procedure
C	64	–	**(M) (O) (P) (MV)**

One pressure stop per door may be inoperative or missing provided:
a. There are no visible defects on remaining stops for the associated door.
b. Flight is conducted unpressurized.
c. Cargo compartments must remain empty, except for ballast, empty cargo containers (ballast may be loaded in ULDs), fly away kits, pallets, and cargo restraint components.

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MAINTENANCE (M)

Inspect remaining pressure stops for the associated door and establish airplane in unpressurized flight configuration (AMM DDG 52-11-02).

1. Visually inspect remaining pressure stops for the associated door and fuselage to ensure there are no other defects.

   Note: Door stops are numbered 1 to 6 from bottom to top on both forward and aft edges of door.

2. Establish airplane in unpressurized flight configuration.
   A. For 787-8: **TQA to TQF**
      1) Open the Outflow valves.
         a. Set the Pressurization Panel (P5) FWD OUTFLOW VALVE and AFT OUTFLOW VALVE switches to MAN.
         b. Hold both manual switches CLOSE until the EICAS outflow valve position indicator reads CL, or if EICAS indication is not available hold the switches CLOSE for 30 seconds and confirm the forward and aft outflow valve doors are closed.
         c. Hold both manual switches OPEN until the EICAS outflow valve position indicator reads OP, or if EICAS indication is not available hold the switches OPEN for 30 seconds and confirm the forward and aft outflow valve doors are full open.
         d. Leave the Pressurization Panel (P5) FWD OUTFLOW VALVE and AFT OUTFLOW VALVE switches in MAN.

TWA to TWB

B. For 787-9:
  1) Open the Outflow valves.
    a. Set the Pressurization Panel (P5) FWD OUTFLOW VALVE and AFT OUTFLOW VALVE switches to MAN.
    b. Hold both manual switches CLOSE until the EICAS outflow valve position indicator reads CL and confirm the forward and aft outflow valve doors are closed.
    c. Hold both manual switches OPEN until the EICAS outflow valve position indicator is in the 1 o'clock position and confirm the forward and aft outflow valve doors are full open.
    d. Leave the Pressurization Panel (P5) FWD OUTFLOW VALVE and AFT OUTFLOW VALVE switches in MAN.

C. Deactivate the forward and aft lower cargo compartment smoke detection system.
  1) For forward lower cargo compartment smoke detection system:
    a. Using a flight deck multi-function display only, open the following circuit breakers and lock with an INOP tag.
      - SMOKE DETECTOR-FWD CARGO 1A
      - SMOKE DETECTOR-FWD CARGO 1B
      - SMOKE DETECTOR-FWD CARGO 2A
      - SMOKE DETECTOR-FWD CARGO 2B
  2) For aft lower cargo compartment smoke detection system:
    a. Using a flight deck multi-function display only, open the following circuit breakers and lock with an INOP tag.
      - SMOKE DETECTOR-AFT CARGO 1A
      - SMOKE DETECTOR-AFT CARGO 1B
      - SMOKE DETECTOR-AFT CARGO 2A
      - SMOKE DETECTOR-AFT CARGO 2B

Note: The DET FIRE CARGO FWD and DET FIRE CARGO AFT advisory messages and status messages for all cargo fire detectors will be displayed.

D. For OFCR or OFAR installed:
  1) Deactivate the crew/attendant rest(s) closed
    a. Remove all baggage and personal items from the associated crew/attendant rest.

      Note: Blankets, pillows and other items normally used in the crew rest may remain.

    b. Close the associated crew/attendant rest entrance door.

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OPERATIONS (O)

1 Use MEL Item 21-31-01B (O) procedure.
2. Cargo compartments must remain empty, except for ballast, empty cargo containers (ballast may be loaded in ULDs), fly away kits, pallets, and cargo restraint components.
3. For flight with passengers:
   A. Limit enroute altitude to 10,000 feet.
   B. To avoid passenger discomfort, limit climb (after takeoff obstacle clearance has been assured) and descent rates to 500 fpm.

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52-11-02 Passenger Entry Doors Pressure Stop Assemblies

52-11-02-02 Door Stops 3 and 4

Interval	Installed	Required	Procedure
C	32	–	**(M) (O) (P) (MV)**

One pressure stop per door may be inoperative or missing provided:

a. There are no visible defects on remaining stops for the associated door.
b. All automatic cabin pressure control channels operate normally.
d. Airplane pressure altitude does not exceed 12,000 feet.

MAINTENANCE (M)

Visually inspect remaining pressure stops for the associated door and fuselage to ensure there are no other defects (AMM DDG 52-11-02).

Note: Door stops are numbered 1 to 6 from bottom to top on both forward and aft edges of door.

OPERATIONS (O)

1. Airplane pressure altitude is limited to 12,000 feet.

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52-11-03 Passenger Entry Doors Hold-Open Mechanisms

Interval	Installed	Required	Procedure
C	8	7	**(P)**

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52-11-04 Passenger Entry Doors Hold-Open Release Handles

Interval	Installed	Required	Procedure
C	8	4	**(P)**

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52-11-05 Passenger Entry Door Flight Lock Systems

Interval	Installed	Required	Procedure
C	8	0	**(M) (O) (P)**

May be inoperative provided:

a. Associated door is verified to be capable of being opened before each departure.

b. Flight attendant(s) monitors the affected door handle when cabin differential pressure is less than 1.5 psi.

MAINTENANCE (M)

Verify the associated passenger entry door is capable of being opened before each departure using the interior handle (AMM DDG 52-11-05).

1. Set EPAS safety switch to SAFE.
2. Set the door mode select handle to the disarmed/manual (green band) position.
3. Rotate the inside door handle to the open position. Open door slightly.
4. Close door and rotate handle back to closed position.
5. Set EPAS safety switch to NORMAL.

OPERATIONS (O)

1. Each affected door must be monitored by a person employed by THAI when cabin differential pressure is less than 1.5 psi to ensure door handle is not operated by passengers.
2. Flight crew should inform cabin crew when monitoring is required.

52-11-06 EPAS Power Channels

Interval	Installed	Required	Procedure
C	16	8	**(P)**

One power channel per door may be inoperative.

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52-11-07 EPAS Disarmed Sensors

Interval	Installed	Required	Procedure
C	8	0	**(P)**

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OPERATIONS NOTE

1. The memo message DOORS MANUAL will be inoperative. The memo message DOORS AUTO/MANUAL will be displayed if all doors are not in automatic mode (DOORS AUTO displayed). The associated disarm indication will not be available on the Doors synoptic.
2. The door 1L flight attendant switch panel MANUAL indicator and the associated passenger door manual mode indicator will be inoperative.

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52-11-07 EPAS Disarmed Sensors

52-11-07-01 Passenger Door Manual Mode Indicators (Including Door 1L Attendant Switch Panel Indicator)

Interval	Installed	Required	Procedure
C	9	0	**(P)**

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52-11-08 Passenger Door Automatic Mode Indicators (Including Door 1L Attendant Switch Panel Indicator)

Interval	Installed	Required	Procedure
C	9	0	**(P)**

May be inoperative provided:

a. Flight deck indications for passenger door slide automatic mode operate normally.

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52-34-01 Forward Cargo Door Lift/Latch System (Electric and Manual Modes)

52-34-01A One Mode Inoperative

Interval	Installed	Required	Procedure
C	2	1	**(M) (P)**

One may be inoperative provided:
a. There is no damage to the lift mechanism.
b. There is no damage to the latch mechanism.
c. Door is operated using the maintenance manual procedure.

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MAINTENANCE (M)

Operate the door using the remaining mode (AMM DDG 52-34-01).

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52-34-01 Forward Cargo Door Lift/Latch System (Electric and Manual Modes)

52-34-01B Both Modes Inoperative

Interval	Installed	Required	Procedure
C	2	0	**(M) (P)**

May be inoperative provided:

a. Associated door is verified closed, latched and locked before each departure.

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MAINTENANCE (M)

Before each flight, verify that the associated door is closed, latched and locked (AMM DDG 52-34-01).

52-34-02 Forward Cargo Door Control Panel Lights (FULL OPEN, READY TO LOCK, CLOSED & LOCKED

Interval	Installed	Required	Procedure
C	3	0	**(M) (P)**

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MAINTENANCE (M)

For FULL OPEN light inoperative, check that door is full open. For READY TO LOCK light inoperative, check that door is ready to lock. For CLOSED & LOCKED light inoperative, verify door is closed, latched, and locked before each departure (AMM DDG 52-34-02).

1. For FULL OPEN light inoperative, when opening the door:
    A. Check that door is fully open.
2. For READY TO LOCK light inoperative, when closing the door:
    A. Check that door is fully closed.
    B. Check that the latch triangle tips are visible in all 5 view ports.
3. For CLOSED & LOCKED light inoperative, when closing and locking the door:
    A. Check that door is fully closed.
    B. Check that the door skin is aligned and faired with the fuselage skin.
    C. Rotate the lock handle to the open position.
    D. Check that the vent door is open.
    E. Rotate the lock handle to the closed position.
    F. Check that the lock handle lever and trigger are faired with the door skin.
    G. Check that the vent door is fully closed.
    H. Check that the lock triangle tips and the latch triangle tips are visible in all 5 view ports.

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52-35-01 Aft Cargo Door Lift/Latch System (Electric and Manual Modes)

52-35-01A One Mode Inoperative

Interval	Installed	Required	Procedure
C	2	1	**(M) (P)**

One may be inoperative provided:

a. There is no damage to the lift mechanism.
b. There is no damage to the latch mechanism.
c. Door is operated using the maintenance manual procedure.

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MAINTENANCE (M)

Operate the door using the remaining mode (AMM DDG 52-35-01).

52-35-01 Aft Cargo Door Lift/Latch System (Electric and Manual Modes)

52-35-01B Both Modes Inoperative

Interval	Installed	Required	Procedure
C	2	0	**(M) (P)**

May be inoperative provided:

a. Associated door is verified closed, latched and locked before each departure.

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MAINTENANCE(M)

Before each flight, verify that the associated door is closed, latched and locked (AMM DDG 52-35-01).

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52-35-02 Aft Cargo Door Control Panel Lights (FULL OPEN, READY TO LOCK, CLOSED & LOCKED)

Interval	Installed	Required	Procedure
C	3	0	**(M) (P)**

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MAINTENANCE (M)

For FULL OPEN light inoperative, check that door is full open. For READY TO LOCK light inoperative, check that door is ready to lock. For CLOSED & LOCKED light inoperative, verify door is closed, latched, and locked before each departure (AMM DDG 52-35-02).

1. For FULL OPEN light inoperative, when opening the door:
    A. Check that door is fully open.
2. For READY TO LOCK light inoperative, when closing the door:
    A. Check that door is fully closed.
    B. Check that the latch triangle tips are visible in all 5 view ports.
3. For CLOSED & LOCKED light inoperative, when closing and locking the door:
    A. Check that door is fully closed.
    B. Check that the door skin is aligned and faired with the fuselage skin.
    C. Rotate the lock handle to the open position.
    D. Check that the vent door is open.
    E. Rotate the lock handle to the closed position.
    F. Check that the lock handle lever and trigger are faired with the door skin.
    G. Check that the vent door is fully closed.
    H Check that the lock triangle tips and the latch triangle tips are visible in all 5 view ports.

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52-36-01 Bulk Cargo Door Gas Spring

Interval	Installed	Required	Procedure
C	1	0	**(M) (P)**

May be inoperative provided:

a. Bulk cargo door damper operates normally.
b. Safety hold open device is used when door is in the open position.

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MAINTENANCE (M)

Note: The bulk cargo door is heavy and may require two people when opening.

When the bulk cargo door is opened, secure the door in the open position with the safety strap loop installed in the bulk compartment (AMM DDG 52-36-01).

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52-36-02 Bulk Cargo Door Damper

Interval	Installed	Required	Procedure
C	1	0	**(P)**

May be inoperative provided:

a. The bulk cargo door gas spring operates normally.

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52-36-03 Bulk Cargo Door Exterior Handle

Interval	Installed	Required	Procedure
C	1	0	**(M) (P)**

May be inoperative provided:

a. Interior handle operates normally.
b. Bulk cargo door indication operates normally.
c. Before each departure, bulk cargo door is verified closed, latched, and locked.

MAINTENANCE (M)

Before each flight, verify that the door is closed, latched, and locked (AMM DDG 52-36-03).

1. Open and then close bulk cargo door using the interior handle.
2. Check that the door skin is aligned and faired with the fuselage skin.
3. Check that the latch handle is fully closed and faired with the door skin.
4. Push on the door to verify it is latched.

Note: Verify DOOR BULK CARGO advisory is not displayed.

52-51-01 Flight Deck Door Automatic Locking System

52-51-01-02 Flight Deck Door Automatic Locking System

52-51-01-02A Passenger Allowed

Interval	Installed	Required	Procedure
A	1	0	**(M) (O) (P)**

May be inoperative provided:

a. Automatic locking system is deactivated.
b. Door dead bolt operates normally and is used to lock the door.
c. Repairs are made within two flight days.

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MAINTENANCE (M)

Deactivate the flight deck door automatic locking system (AMM DDG 52-51-01).

1. Deactivate the flight deck door automatic locking system by setting the overhead panel (P5) Flight Deck Door Power switch OFF.

   Note: The FD DOOR LOCK FAIL advisory message will be displayed.

OPERATIONS (O)

1. Use dead bolt to lock the door.
2. At least two crews must be permanently present in the flight deck throughout the entire flight.
3. P-i-C shall establish the crew communication, identification and door operation procedure based on the usable equipment in order to be able to comply with the flight deck security requirement.
4. Prior to flight, the P-i-C must brief crew members on the established procedure.

52-51-01 **Flight Deck Door Automatic Locking System**
52-51-01-02 **Flight Deck Door Automatic Locking System**

52-51-01-02B **Passengers Not Allowed**

Interval	Installed	Required	Procedure
C	1	0	**(M) (O) (P)**

May be inoperative provided:

a. Automatic locking system is deactivated.
b. No passengers are carried.
c. A maximum of 19 persons authorized for non-passenger carrying operations are carried.

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MAINTENANCE (M)

Deactivate the flight deck door automatic locking system (AMM DDG 52-51-01).

1. Deactivate the flight deck door automatic locking system by setting the overhead panel (P5) Flight Deck Door Power switch OFF.
   Note: The FD DOOR LOCK FAIL advisory message will be displayed.

OPERATIONS (O)

1. No passengers may be carried.
2. A maximum of 19 persons (crew member, company employee, or inspector performing official duties) may be carried.
3. At least two crews must be permanently present in the flight deck throughout the entire flight.
4. P-i-C shall establish the crew communication, identification and door operation procedure based on the usable equipment in order to be able to comply with the flight deck security requirement.
5. Prior to flight, the P-i-C must brief crew members on the established procedure.

52-51-01 **Flight Deck Door Automatic Locking System**
52-51-01-02 **Flight Deck Door Automatic Locking System**

52-51-01-02-01 **Flight Deck Access System**

Interval	Installed	Required	Procedure
C	1	0	**(M) (O) (P)**

May be inoperative provided:
a. Keypad is deactivated.

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MAINTENANCE (M)

Deactivate the flight deck access keypad (AMM DDG 52-51-01).

1. Using a flight deck multi-function display only, open circuit breaker FLT DK ACCESS SYS KEYPAD and lock with an INOP tag.

   Note: Ensure the Flight Deck Door Power switch is OFF when the flight deck door is to be closed and the flight deck is not occupied.

OPERATIONS (O)

1. At least two crews must be permanently present in the flight deck throughout the entire flight.
2. P-i-C shall establish the crew communication, identification and door operation procedure based on the usable equipment in order to be able to comply with the flight deck security requirement.
3. Prior to flight, the P-i-C must brief crew members on the established procedure.

Note: Ensure the Flight Deck Door Power switch is OFF when the flight deck door is to be closed and the flight deck is not occupied.

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52-51-01 **Flight Deck Door Automatic Locking System**
52-51-01-02 **Flight Deck Door Automatic Locking System**
52-51-01-02-01 **Flight Deck Access System**

52-51-01-02-01-01 **LEDs**

Interval	Installed	Required	Procedure
C	3	0	**(O) (P)**

May be inoperative provided:
a. Interphone systems are verified to operate normally.

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OPERATIONS (O)

1. At least two crews must be permanently present in the flight deck throughout the entire flight.
2. P-i-C shall establish the crew communication, identification and door operation procedure based on the usable equipment in order to be able to comply with the flight deck security requirement.
3. Prior to flight, the P-i-C must brief crew members on the established procedure.

52-51-01 **Flight Deck Door Automatic Locking System**
52-51-01-02 **Flight Deck Door Automatic Locking System**
52-51-01-02-01 **Flight Deck Access System**

52-51-01-02-01-02 **Door Bell Mode**

Interval	Installed	Required	Procedure
C	1	0	**(O) (P)**

May be inoperative provided:
a. Interphone systems are verified to operate normally.

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OPERATIONS (O)

1. At least two crews must be permanently present in the flight deck throughout the entire flight.
2. P-i-C shall establish the crew communication, identification and door operation procedure based on the usable equipment in order to be able to comply with the flight deck security requirement.
3. Prior to flight, the P-i-C must brief crew members on the established procedure.

52-51-01 **Flight Deck Door Automatic Locking System**
52-51-01-02 **Flight Deck Door Automatic Locking System**
52-51-01-02-01 **Flight Deck Access System**

52-51-01-02-01-03 **Keypad Channels**

Interval	Installed	Required	Procedure
C	2	1	**(P)**

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52-51-01 **Flight Deck Door Automatic Locking System**
52-51-01-02 **Flight Deck Door Automatic Locking System**

52-51-01-02-02 **Flight Deck Door Access Selector**

Interval	Installed	Required	Procedure
C	1	0	**(M) (O) (P)**

May be inoperative provided:
a. Keypad is deactivated.
b. Electric lock is verified to operate normally.

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MAINTENANCE (M)

Deactivate the keypad and verify the electric lock operates normally (AMM DDG 52-51-01).

1. Deactivate the keypad.
   A. Using a flight deck multi-function display only, open circuit breaker FLT DK ACCESS SYS KEYPAD and lock with an INOP tag.
      Note: Ensure the Flight Deck Door Power switch is OFF when the flight deck door is to be closed and the flight deck is not occupied.
2. Verify the automatic lock operates normally.
   A. With the flight deck door open, supply electrical power on the airplane.
   B. Set the overhead panel (P5) Flight Deck Door Power switch ON.
   C. Verify the electric strike is in the locked position (solenoid pin in the electric strike will be extended up such that you cannot rotate the strike).
   D. Set the overhead panel (P5) Flight Deck Door Power switch OFF.
   E. Verify the electric strike is in the unlocked position (solenoid pin in the electric strike will retract down such that you can rotate the strike).
   F. Set the overhead panel (P5) Flight Deck Door Power switch ON.
   G. Verify the electric strike is in the locked position (solenoid pin in the electric strike will be extended up such that you cannot rotate the strike).

OPERATIONS (O)

1. At least two crews must be permanently present in the flight deck throughout the entire flight.
2. P-i-C shall establish the crew communication, identification and door operation procedure based on the usable equipment in order to be able to comply with the flight deck security requirement.
3. Prior to flight, the P-i-C must brief crew members on the established procedure.

Note: Ensure the Flight Deck Door Power switch is OFF when the flight deck door is to be closed and the flight deck is not occupied.

52-51-01 **Flight Deck Door Automatic Locking System**
52-51-01-02 **Flight Deck Door Automatic Locking System**

52-51-01-02-03 **FD DOOR LOCK FAIL Indication**

Interval	Installed	Required	Procedure
C	1	0	**(M) (P)**

May be inoperative provided:
a. Automatic locking controls are verified to operate normally.

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MAINTENANCE (M)
Verify the automatic locking controls operate normally (AMM DDG 52-51-01).
1. With the flight deck door open, supply electrical power on the airplane.
2. Set the overhead panel (P5) Flight Deck Door Power switch ON.
3. Set the control stand panel (P8) Flight Deck Door Access selector AUTO.
4. Verify the electric strike is in the locked position (solenoid pin in the electric strike will be extended up such that you cannot rotate the strike).
5. Enter keypad access code and verify the door chime sounds.
6. Set the control stand panel (P8) Flight Deck Door Access selector DENY.
7. Before the DENY time delay has expired, enter the keypad access code and verify the door chime does not sound.
8. Set and hold control stand panel (P8) Flight Deck Door Access selector UNLKD.
9. Verify the electric strike is in the unlocked position (solenoid pin in the electric strike will retract down such that you can rotate the strike).
10. Set the control stand panel (P8) Flight Deck Door Access selector AUTO.
11. Verify the electric strike is in the locked position (solenoid pin in the electric strike will be extended up such that you cannot rotate the strike).

52-51-01 **Flight Deck Door Automatic Locking System**
52-51-01-02 **Flight Deck Door Automatic Locking System**

52-51-01-02-04 **FD DOOR AUTO UNLK Indication**

Interval	Installed	Required	Procedure
C	1	0	**(M) (P)**

May be inoperative provided:

a. Automatic locking controls are verified to operate normally.
b. Door chime is verified to operate normally.

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MAINTENANCE (M)

Verify the automatic locking controls operate normally (AMM DDG 52-51-01).

1. With the flight deck door open, supply electrical power on the airplane.
2. Set the overhead panel (P5) Flight Deck Door Power switch ON.
3. Set the control stand panel (P8) Flight Deck Door Access selector AUTO.
4. Verify the electric strike is in the locked position (solenoid pin in the electric strike will be extended up such that you cannot rotate the strike).
5. Enter keypad access code and verify the door chime sounds.
6. Set the control stand panel (P8) Flight Deck Door Access selector DENY.
7. Before the DENY time delay has expired, enter the keypad access code and verify the door chime does not sound.
8. Set and hold control stand panel (P8) Flight Deck Door Access selector UNLKD.
9. Verify the electric strike is in the unlocked position (solenoid pin in the electric strike will retract down such that you can rotate the strike).
10. Set the control stand panel (P8) Flight Deck Door Access selector AUTO.
11. Verify the electric strike is in the locked position (solenoid pin in the electric strike will be extended up such that you cannot rotate the strike).

52-51-01 **Flight Deck Door Automatic Locking System**
52-51-01-02 **Flight Deck Door Automatic Locking System**

52-51-01-02-05 **FD DOOR OPEN Indication**

Interval	Installed	Required	Procedure
C	1	0	**(M) (P)**

May be inoperative provided:
a. Electric lock is verified to operate normally.

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MAINTENANCE (M)
Verify the electric lock operates normally (AMM DDG 52-51-01).

1. With the flight deck door open, supply electrical power on the airplane.
2. Set the overhead panel (P5) Flight Deck Door Power switch ON.
3. Verify the electric strike is in the locked position (solenoid pin in the electric strike will be extended up such that you cannot rotate the strike).
4. Set the overhead panel (P5) Flight Deck Door Power switch OFF.
5. Verify the electric strike is in the unlocked position (solenoid pin in the electric strike will retract down such that you can rotate the strike).
6. Set the overhead panel (P5) Flight Deck Door Power switch ON.
7. Verify the electric strike is in the locked position (solenoid pin in the electric strike will be extended up such that you cannot rotate the strike).

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52-51-01 Flight Deck Door Automatic Locking System

52-51-01-02 Flight Deck Door Automatic Locking System

52-51-01-02-06 Power Switch OFF Light

Interval	Installed	Required	Procedure
C	1	0	**(P)**

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52-51-01 Flight Deck Door Automatic Locking System
52-51-01-02 Flight Deck Door Automatic Locking System

52-51-01-02-07 **Power Switch ON Light**

Interval	Installed	Required	Procedure
C	1	0	**(P)**

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52-51-02 Flight Deck Door Dead Bolt

Interval	Installed	Required	Procedure
C	1	0	**(P)**

May be inoperative provided:

a. Flight deck door automatic locking system operates normally.

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52-51-03 Flight Deck Door Decompression Panel Latch

Interval	Installed	Required	Procedure
A	1	0	**(P)**

May be inoperative provided:

a. Decompression panel is in the latched position.
b. Repairs are made within two flight days.

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52-71-01 Door Indication Systems

Interval	Installed	Required	Procedure
C	–	0	**(M) (P)**

May be inoperative provided:

a. Associated door is verified closed, latched and, if applicable, locked before each departure.

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MAINTENANCE (M)

Before each flight, verify that the door associated with the inoperative indication system is closed, latched and, if applicable, locked (AMM DDG 52-71-01).

Note: If a Passenger Entry Door, Aft Cargo Door or Forward Cargo Door alert level message is displayed without the associated status message after the door is closed, latched and locked, the airplane should not be dispatched until the message is resolved. The Bulk Cargo Door, Aft E/E Access Door, Flight Deck Overhead Door, Forward Access Door and the Forward E/E Access Door are not included in this condition.

1. For Passenger Entry Doors:
   - A. Set EPAS safety switch to SAFE.
   - B. Set door mode select handle to disarmed/manual (green band) position.
   - C. Rotate the inside door handle to the open position. Open door slightly.
   - D. Close door and rotate door handle to closed position.
   - E. Remove the closed/latched visual indicator access panel cover on the forward doorway liner.
   - F. Check that the latched triangle is aligned with the closed/latched indicator (see placard affixed to the access panel cover).
   - G. Reinstall the access panel cover.
   - H. Remove the locked visual indicator access panel cover on the door main handle cover.
   - I. Check that the locked triangle is aligned with the locked indicator (see placard affixed to the access panel cover).
   - J. Reinstall the access panel cover.
   - K. Check that the outside skin of the door is aligned and faired with the surrounding body skin.
   - L. Check that the vent door is fully closed.
   - M. Set EPAS safety switch to NORMAL.

2. For Flight Deck Overhead Door:
   - A. Open the overhead door from the inside.
     - 1) Remove the acoustic pad.
     - 2) While holding the door, turn the handle to the OPEN position.
     - 3) Move the door down and inboard.
   - B. Close the overhead door from the inside.
     - 1) Move the door upward and outboard until the door touches the door jamb.
     - 2) Turn the handle to the fully latched position.
     - 3) Check that handle markings are aligned with LATCHED markings.
     - 4) Attach the acoustic pad.
3. For Forward Cargo Door and Aft Cargo Door:
   - A. Close, latch and lock the affected door using normal procedures.
   - B. Check that the door skin is aligned and faired with the fuselage skin.
   - C. Rotate the lock handle to the open position.
   - D. Check that the vent door is open.
   - E. Rotate the lock handle to the closed position.
   - F. Check that the lock handle lever and trigger are faired with the door skin.
   - G. Check that the vent door is fully closed.
   - H. Check that the lock triangle tip and the latch triangle tip are visible in all 5 view ports.
4. For Bulk Cargo Door:
   - A. Open and then close bulk cargo door using normal procedures.
   - B. Check that the door skin is aligned and faired with the fuselage skin.
   - C. Check that the latch handle is fully closed and faired with the door skin.
   - D. Push on the door to verify it is latched.

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5. For Aft Electrical Equipment (EE) Bay Access door:
    A. Open the Wing-To-Body Fairing (WTBF) Aft EE Bay Access door.
    B. Open and then close the Aft EE Bay Access door.
    C. Check that the Aft EE Bay Access door external handle is in the fully closed position.
    D. Push on the door to verify it is latched.
    E. Close the WTBF Aft EE Bay Access door.
    F. Check that the WTBF door flags are closed.
    G. Check that the outside skin of the WTBF Aft EE Bay Access door is aligned and faired with the fuselage skin.
    H. Check that the WTBF Aft EE Bay Access door latch handle is fully closed and faired with the door skin.
    I. Push on the WTBF Aft EE Bay Access door to verify it is latched.
6. For Forward Access Door and Forward Electrical Equipment (EE) Access Door:
    A. Open and then close the access door.
    B. Check that the outside skin of the door is aligned and faired with the fuselage skin.
    C. Check that the latch handle is fully closed and faired with the door skin.
    D. Push on the door to verify it is latched.

OPERATIONS NOTE

1. If a Passenger Entry Door, Aft Cargo Door or Forward Cargo Door alert level message is displayed without the associated status message after the door is closed, latched and locked, the airplane should not be dispatched until the message is resolved. The Bulk Cargo Door, Aft EE Access Door, Flight Deck Overhead Door, Forward Access Door and the Forward EE Access Door are not included in this condition.

52-71-01 **Door Indication Systems**

52-71-01-01 **Passenger Door Locked Indication Light**

Interval	Installed	Required	Procedure
C	8	0	**(P)**

May be inoperative provided:

a. Associated passenger entry door indication system operates normally.

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Table of Contents

ATA 57 **WINGS** ATA 57-1
Table Of Contents ATA 57-1
57-51-41 **Wing Trailing Edge Fluid Drainage System** ATA 57-2

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57-51-41 Wing Trailing Edge Fluid Drainage System

Interval	Installed	Required	Procedure
C	30	28	**(P)**

One drain tube per side (L/R) may be inoperative.

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Table of Contents

ATA 73 ENGINE FUEL & CONTROL ATA 73-1
Table Of Contents ATA 73-1
73-11-02 Engine Fuel/Oil Heat Exchanger (FOHE) Sensors ATA 73-2
  73-11-02-01 Engine Fuel/Oil Heat Exchanger (FOHE) Sensors ATA 73-2
73-21-01 Electronic Engine Controls (EEC) Normal Mode ATA 73-3
  73-21-01-01 Electronic Engine Controls (EEC) Normal Mode ATA 73-3
73-21-02 Electronic Engine Controls (EEC) NORM/ALTN Mode Lights ATA 73-4
73-21-03 EEC C1 Faults ATA 73-5
  73-21-03-01 EEC C1 Faults ATA 73-5
    73-21-03-01A One Engine ATA 73-5
    73-21-03-01B Both Engines ATA 73-6
73-21-06 Engine Thrust Control Malfunction Accommodation (TCMA) Functions ATA 73-7
73-31-01 Fuel Flow Indications ATA 73-8
73-34-01 Engine Fuel Filter Bypass Warning Systems ATA 73-9
  73-34-01-02 With Engine Fuel/Oil Heat Exchanger Sensors Installed ATA 73-9

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73-11-02 Engine Fuel/Oil Heat Exchanger (FOHE) Sensors

73-11-02-01 Engine Fuel/Oil Heat Exchanger (FOHE) Sensors

Interval	Installed	Required	Procedure
C	–	–	**(P)**

One may be inoperative provided:
a. The associated engine fuel filter bypass warning system operates normally.

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73-21-01 Electronic Engine Controls (EEC) Normal Mode

73-21-01-01 Electronic Engine Controls (EEC) Normal Mode

Interval	Installed	Required	Procedure
C	2	0	**(O) (P)**

Normal (NORM) mode may be inoperative provided:

a. Autothrottle system operates normally.
b. Both engines are operated in the alternate (ALTN) mode.
c. The performance adjustments are applied.

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OPERATIONS (O)

Note: Derated or reduced thrust takeoffs are not allowed.

1. Base performance on EECs operating in alternate mode.
2. Set both EEC Mode switches to ALTN.
3. For takeoff, engage autothrottle and arm VNAV.
4. Prior to autothrottle engagement for takeoff, advance thrust levers to approximately 45% N1.
5. Increase flight planning fuel by either using a fuel flow correction factor of 1.6% or increase the flight planning fuel by 2.0%.

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73-21-02 Electronic Engine Controls (EEC) NORM/ALTN Mode Lights

Interval	Installed	Required	Procedure
C	2	0	**(M) (P)**

May be inoperative provided:

a. Associated switches are verified to operate normally.

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MAINTENANCE (M)

Verify associated engine panel (P5) EEC mode switch operates normally (AMM DDG 73-21-02).

1. On the MISC SYSTEM CTRLS (MSC) maintenance page, set associated EEC MAINT switch to TEST.
2. Set associated engine panel (P5) EEC mode switch to ALTN and verify the ENG EEC MODE L or R advisory message is displayed.
3. Set associated engine panel (P5) EEC mode switch to NORM and verify the ENG EEC MODE L or R advisory message is not displayed.
4. On the MISC SYSTEM CTRLS (MSC) maintenance page, set associated EEC MAINT switch to NORM.

73-21-03 EEC C1 Faults

73-21-03-01 EEC C1 Faults

73-21-03-01A One Engine

Interval	Installed	Required	Procedure
A	2	1	**(M) (P)**

One may be dispatched with C1 faults provided:

a. Repairs are made within 10 calendar days.

MAINTENANCE (M)

Prior to each flight with EICAS Status Message ENG EEC C1 X (where X is the engine position “L” or “R”), verify that a dual N2 sensor failure on EEC Channel A does not exist by checking for the fault combinations below. Dispatch of an airplane is prohibited if the status message ENG EEC C1 X and either of the following conditions exists:

1. For engine 1 (L), both correlated maintenance messages 73-76241 and 73-76251 are displayed; or
2. For engine 2 (R), both correlated maintenance messages 73-76242 and 73-76252 are displayed.

73-21-03 EEC C1 Faults

73-21-03-01 EEC C1 Faults

73-21-03-01B Both Engines

Interval	Installed	Required	Procedure
A	2	0	**(M) (P)**

May be dispatched with C1 faults provided:

a. At least one engine is verified to not have P30 faults before each departure.

b. Repairs are made within 10 calendar days.

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MAINTENANCE (M)

Note: Prior to each flight with EICAS Status Message ENG EEC C1 X (where X is the engine position “L” or “R”), verify that a dual N2 sensor failure on EEC Channel A does not exist by checking for the fault combinations below. Dispatch of an airplane is prohibited if the status message ENG EEC C1 X and either of the following conditions exists:

1. For engine 1 (L), both correlated maintenance messages 73-76241 and 73-76251 are displayed; or
2. For engine 2 (R), both correlated maintenance messages 73-76242 and 73-76252 are displayed.

Before each departure, verify a P30 fault is not present for at least one engine.

1. Using the CMCF:
   A. Select the EXTENDED MAINTENANCE menu item.
      1) For engine 1:
         a. Confirm correlated maintenance message 73-97081 is not displayed in the PRESENT LEG FAULTS.
      2) For engine 2:
         a. Confirm correlated maintenance message 73-97082 is not displayed in the PRESENT LEG FAULTS.

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73-21-06 Engine Thrust Control Malfunction Accommodation (TCMA) Functions

Interval	Installed	Required	Procedure
C	2	1	**(P)**

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73-31-01 Fuel Flow Indications

Interval	Installed	Required	Procedure
C	2	1	**(P) (MV)**

One may be inoperative provided:
a. All fuel tank quantity indications operate normally.
b. Flight remains within 180 minutes of landing at a suitable airport.

OPERATIONS NOTE

1. The FMC CALCULATED fuel, associated engine LEFT or RIGHT fuel used and FUEL USED total indications will be inoperative. The FUEL DISAGREE advisory message will be inoperative.

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73-34-01 Engine Fuel Filter Bypass Warning Systems

73-34-01-02 With Engine Fuel/Oil Heat Exchanger Sensors Installed

Interval	Installed	Required	Procedure
C	2	1	**(P)**

One may be inoperative provided:

a. The associated engine fuel/oil heat exchanger (FOHE) sensor operates normally.

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Table of Contents

ATA 74 **IGNITION** .... **ATA 74-1**
Table Of Contents .... **ATA 74-1**
74-00-01 **Ignition Systems** .... **ATA 74-2**
  74-00-01-01 **Ignition Systems** .... **ATA 74-2**

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74-00-01 Ignition Systems

74-00-01-01 Ignition Systems

Interval	Installed	Required	Procedure
B	4	3	**(P)**

One may be inoperative provided:

a. Associated engine anti-ice system operates normally.
b. Associated engine ESS valve operates normally.

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OPERATIONS NOTE

1. Associated engine anti-ice system is considered operating normally for dispatch with PRSOV locked in mid position (30-21-01-02), PRV locked in mid position (30-21-01-04), pressure sensors number 1 inoperative (30-21-01-06-01), pressure sensors number 2 inoperative (30-21-01-06-02).
2. Associated engine ESS valve is considered operating normally for dispatch with the ESS valve inoperative open (75-11-01B).

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Table of Contents

ATA 75 **BLEED AIR** ATA 75-1

Table Of Contents ATA 75-1

75-11-01 Engine Section Stator (ESS) Anti-Ice Valves ATA 75-2
  75-11-01-01 Engine Section Stator (ESS) Anti-Ice Valves ATA 75-2
    75-11-01-01A Valve Closed ATA 75-2

75-11-01 Engine Section Stator (ESS) Anti-Ice Valves ATA 75-3
    75-11-01-01B Valve Open ATA 75-3

75-24-02 Advanced Turbine Case Cooling (TCC) Valve Systems (RR Package C1 (TRENT 1000-A2 To TRENT 1000-L2)) ATA 75-4
  75-24-02-01 HP TCC Valves ATA 75-4
  75-24-02-02 IP TCC ATA 75-5

75-24-03 Modulated Air System (RR 1000-TEN) ATA 75-6
  75-24-03-01 MAS Valve ATA 75-6
  75-24-03-02 MAS Valve Sensor ATA 75-7
  75-24-03-03 MAS System Test ATA 75-8

75-33-01 Engine Intermediate Pressure (IP) Bleed Valves ATA 75-9

75-11-01 Engine Section Stator (ESS) Anti-Ice Valves

75-11-01-01 Engine Section Stator (ESS) Anti-Ice Valves

75-11-01-01A Valve Closed

Interval	Installed	Required	Procedure
C	2	1	**(P) (MV)**

One may be inoperative closed provided:

a. Associated engine ignition systems operate normally.
b. Airplane is not operated in known or forecast icing conditions.
c. Flight remains within 120 minutes of landing at a suitable airport.

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75-11-01 Engine Section Stator (ESS) Anti-Ice Valves

75-11-01-01 Engine Section Stator (ESS) Anti-Ice Valves

75-11-01-01B Valve Open

Interval	Installed	Required	Procedure
B	2	0	(O) (P) (MV)

May be inoperative open provided:

a. The performance adjustments are applied.

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OPERATIONS (O)

1. Reduce performance limited weights for any number inoperative by:
   For 787-8:
   TQA to TQF

Takeoff	Approach & Landing Climb	Enroute Climb
2,631 kg	1,769 kg	1,451 kg

Note: The enroute climb weight penalties are based on single engine operating speeds that approximate maximum lift-to-drag ratio speed. To account for the difference in level-off altitude when operating at other speeds, multiply the enroute climb weight penalty listed above by the appropriate factor listed on page 3.00-01-00.2 in the ENROUTE DIVERSION SPEED EFFECTS paragraph.

2. Reduce performance limited weights as follows for APU inlet door fully open with APU not running:
   For 787-9:
   TWA to TWB

Takeoff	Approach & Landing Climb	Enroute Climb
3,447 kg	1,270 kg	1,497 kg

Note: The enroute climb weight penalties are based on single engine operating speeds that approximate maximum lift-to-drag ratio speed. To account for the difference in level-off altitude when operating at other speeds, multiply the enroute climb weight penalty listed above by the appropriate factor listed on page 3.00-01-00.2 in the ENROUTE DIVERSION SPEED EFFECTS paragraph.

3. Increase flight planning fuel by either using a fuel flow correction factor of 0.9% or increase the flight planning fuel by 1.1% for each inoperative valve. **TQA to TQF**
4. Increase flight planning fuel by either using a fuel flow correction factor of 0.9% or increase the flight planning fuel by 1.2% for each inoperative valve. **TWA to TWB**
5. For ETOPS flight planning, increase engine inoperative Critical Fuel Reserves by 2.2%.
6. Full rated takeoff thrust is not allowed. Reduce full rated takeoff thrust by 10% or more using derated takeoff thrust or using reduced takeoff thrust (assumed temperature method).

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75-24-02 Advanced Turbine Case Cooling (TCC) Valve Systems (RR Package C1 (TRENT 1000-A2 to TRENT 1000-L2))

75-24-02-01 HP TCC Valves

Interval	Installed	Required	Procedure
C	–	0	**(M) (O) (P) (MV)**

May be inoperative provided:
a. Inoperative HP TCC valve is locked in the closed position.
b. Associated engine IP TCC valve operates normally.
c. Appropriate performance adjustments are applied.

MAINTENANCE (M)

Lock the inoperative HP TCC valve in the closed position (AMM DDG 75-24-02).

1. Retract and deactivate the leading edge slats.
2. Deactivate the associated engine thrust reverser for ground maintenance.
3. Gain access to the HP TCC valve.
4. Disconnect and stow the control cable for the inoperative HP TCC valve.
5. Lock the inoperative HP TCC valve in the closed (RIG) position.
6. Activate the associated engine thrust reverser after ground maintenance.
7. Activate the leading edge slats.

OPERATIONS (O)

1. Increase flight planning fuel by either using a fuel flow correction factor of 0.3% or increase the flight planning fuel by 0.3% for each inoperative valve.
2. For ETOPS flight planning, increase engine inoperative Critical Fuel Reserves by 0.5%.
3. Full rated takeoff thrust is not allowed. Reduce full rated takeoff thrust by 5% or more using derated takeoff thrust or using reduced takeoff thrust (assumed temperature method).

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75-24-02 Advanced Turbine Case Cooling (TCC) Valve Systems (RR Package C1 (TRENT 1000-A2 to TRENT 1000-L2))

75-24-02-02 IP TCC

Interval	Installed	Required	Procedure
C	–	0	**(M) (O) (P) (MV)**

May be inoperative provided:

a. Inoperative IP TCC valve is locked in the closed position.
b. Associated engine HP TCC valve operates normally.
c. Appropriate performance adjustments are applied.

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MAINTENANCE (M)

Lock the inoperative IP TCC valve in the closed position (AMM DDG 75-24-02).

1. Retract and deactivate the leading edge slats.
2. Deactivate the associated engine thrust reverser for ground maintenance.
3. Gain access to the IP TCC valve.
4. Disconnect and stow the control cable for the inoperative IP TCC valve.
5. Lock the inoperative IP TCC valve in the closed (RIG) position.
6. Activate the associated engine thrust reverser after ground maintenance.
7. Activate the leading edge slats.

OPERATIONS (O)

Full rated takeoff thrust is not allowed. Reduce full rated takeoff thrust by 5% or more using derated takeoff thrust or using reduced takeoff thrust (assumed temperature method).

1. Increase flight planning fuel by either using a fuel flow correction factor of 0.6% or increase the flight planning fuel by 0.7% for each inoperative valve.
2. For ETOPS flight planning, increase engine inoperative Critical Fuel Reserves by 1.3%.

75-24-03 Modulated Air System (RR 1000-TEN)

75-24-03-01 MAS Valve

Interval	Installed	Required	Procedure
D	–	0	**(M) (O) (P) (MV)**

May be inoperative provided:

a. Associated Modulated Air System is deactivated closed.

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MAINTENANCE (M)

Lock out the MAS valve (AMM 75-24-03/01).

1. Gain access to the associated MAS control valve.
2. Make sure the associated lock-out plate is in the OPEN position.
3. Clean the visible part of the lock-out plate.
4. Rotate the lock-out plate approximately 90 degrees to block the air tube.
5. Secure the lock-out plate in the CLOSED position.

OPERATIONS (O)

1. No increase in flight planning fuel is required if MAS is deactivated closed.

75-24-03 Modulated Air System (RR 1000-TEN)

75-24-03-02 MAS Valve Sensor

Interval	Installed	Required	Procedure
D	–	0	**(M) (O) (P) (MV)**

May be inoperative provided:

a. Associated Modulated Air System is deactivated closed.

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MAINTENANCE (M)

1. Use MEL Item 75-24-03-01 (M) procedure.

OPERATIONS (O)

1. Use MEL Item 75-24-03-01 (O) procedure.

75-24-03 **Modulated Air System (RR 1000-TEN)**

75-24-03-03 **MAS System Test**

Interval	Installed	Required	Procedure
D	–	0	**(M) (O) (P) (MV)**

May be inoperative provided:

a. Associated Modulated Air System is deactivated closed.

MAINTENANCE (M)

Note: The Modulated Air System is made inoperative by deactivation per the (M) procedure. The Modulated Air System Test continues to function. The ENG MAS SYS TEST L/R Status message is due to the Modulated Air System Test not returning a positive result with the Modulated Air System inoperative.

1. Use MEL Item 75-24-03-01 (M) procedure.

OPERATIONS (O)

1. Use MEL Item 75-24-03-01 (O) procedure.

75-33-01 Engine Intermediate Pressure (IP) Bleed Valves

Interval	Installed	Required	Procedure
B	6	4	**(O) (P) (MV)**

One may be inoperative on each engine provided:

a. The performance adjustments are applied.

OPERATIONS (O)

1. Reduce performance limited weights for any number inoperative by:
   For 787-8:
   TQA to TQF

Takeoff	Approach & Landing Climb	Enroute Climb
2,495 kg	1,769 kg	998 kg

Note: The enroute climb weight penalties are based on single engine operating speeds that approximate maximum lift-to-drag ratio speed. To account for the difference in level-off altitude when operating at other speeds, multiply the enroute climb weight penalty listed above by the appropriate factor listed on page 3.00-01-00.2 in the ENROUTE DIVERSION SPEED EFFECTS paragraph.

2. Reduce performance limited weights for any number inoperative by:
   For 787-9:
   TWA to TWB

Takeoff	Approach & Landing Climb	Enroute Climb
2,948 kg	1,225 kg	1,089 kg

Note: The enroute climb weight penalties are based on single engine operating speeds that approximate maximum lift-to-drag ratio speed. To account for the difference in level-off altitude when operating at other speeds, multiply the enroute climb weight penalty listed above by the appropriate factor listed on page 3.00-01-00.2 in the ENROUTE DIVERSION SPEED EFFECTS paragraph.

3. Increase flight planning fuel by either using a fuel flow correction factor of 1.6% or increase the flight planning fuel by 2.0% for each inoperative valve.
4. For ETOPS flight planning, increase engine inoperative Critical Fuel Reserves by 4.0%.
5. Full rated takeoff thrust is not allowed. Reduce full rated takeoff thrust by 10% or more using derated takeoff thrust or using reduced takeoff thrust (assumed temperature method).

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Table of Contents

ATA 77 **ENGINE INDICATING** . . . . **ATA 77-1**
Table Of Contents . . . . **ATA 77-1**
77-22-01 **Engine Turbine Overheat Sensors** . . . . **ATA 77-2**
77-31-01 **Engine Vibration Monitoring Functions** . . . . **ATA 77-3**

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77-22-01 Engine Turbine Overheat Sensors

Interval	Installed	Required	Procedure
C	4	2	**(P)**

One per engine may be inoperative.

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77-31-01 Engine Vibration Monitoring Functions

Interval	Installed	Required	Procedure
C	2	1	**(P)**

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Table of Contents

ATA 78 **ENGINE EXHAUST** ATA 78-1
Table Of Contents ATA 78-1
78-31-01 Thrust Reversers ATA 78-2
78-34-01 Reverse Thrust Lever Interlocks ATA 78-3
  78-34-01A Interlock Released ATA 78-3
  78-34-01B Interlock Not Released ATA 78-4
78-36-01 Thrust Reverser Locking Actuator Proximity Sensors ATA 78-5
  78-36-01-01 Left Thrust Reverser ATA 78-5
    78-36-01-01A RDCs 1 and 3 Operate Normally ATA 78-5
    78-36-01-01B RDCs 1 or 3 Fault ATA 78-6
  78-36-01-02 Right Thrust Reverser ATA 78-7
    78-36-01-02A RDCs 2 and 4 Operate Normally ATA 78-7
    78-36-01-02B RDCs 2 or 4 Fault ATA 78-8

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78-31-01 Thrust Reversers

Interval	Installed	Required	Procedure
C	2	1	**(M) (O) (P) (MV)**

One may be inoperative provided:

a. Inoperative reverser is secured in the forward thrust position.
b. The performance adjustments are applied.

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MAINTENANCE (M)

Deactivate and secure the inoperative reverser in the forward thrust position (AMM DDG 78-31-01).

1. Verify the track lock is in the locked position (primary or alternate method).
2. Gain access to the hydraulic actuators on each thrust reverser half
3. Verify one hydraulic actuator on each thrust reverser half is in the locked position.
4. Gain access to the deactivation pins and retainers.
5. Install the deactivation pins in the left and right reverser sleeves.

OPERATIONS (O)

Note: After engine start, the ENG REV LIMITED L or R advisory message will be displayed for the engine with the thrust reverser deactivated.

1. For a wet or contaminated runway, apply the performance adjustments for one thrust reverser inoperative.

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78-34-01 Reverse Thrust Lever Interlocks

78-34-01A Interlock Released

Interval	Installed	Required	Procedure
C	2	1	**(P)**

One may be inoperative released.

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OPERATIONS NOTE

1. When using reverse thrust, pull the reverser levers up to the normal interlock position and apply reverse thrust as required when the operative interlock releases.

78-34-01 Reverse Thrust Lever Interlocks

78-34-01B Interlock Not Released

Interval	Installed	Required	Procedure
C	2	1	**(O) (P) (MV)**

One may be inoperative not released provided:

a. The performance adjustments are applied.

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OPERATIONS (O)

Note:
1. After engine start, the ENG REV LIMITED L or R advisory message may be displayed for the associated engine.
2. When using reverse thrust, pull the reverse levers up to the normal interlock position and maintain idle reverse, unless asymmetric reverse thrust is required.

1. For a wet or contaminated runway:
   A. Apply the performance adjustments for one thrust reverser inoperative.

78-36-01 Thrust Reverser Locking Actuator Proximity Sensors

78-36-01-01 Left Thrust Reverser

78-36-01-01A RDCs 1 and 3 Operate Normally

Interval	Installed	Required	Procedure
C	4	3	**(P)**

One may be inoperative provided:

a. Remote data concentrator 1 operates normally.
b. Remote data concentrator 3 operates normally.

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78-36-01 **Thrust Reverser Locking Actuator Proximity Sensors**
78-36-01-01 **Left Thrust Reverser**

78-36-01-01B **RDCs 1 or 3 Fault**

Interval	Installed	Required	Procedure
C	4	3	**(P)**

One may be inoperative provided:
a. Left thrust reverser is considered inoperative.

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Note: 1. RDCs are interchangeable. See MEL item 42-21-02-04A.
2. For CCS RDC 1 FAULT or CCS RDC 3 FAULT status messages displayed, the airplane must also be dispatched using MEL item 78-31-01 for the left thrust reverser.

78-36-01 Thrust Reverser Locking Actuator Proximity Sensors

78-36-01-02 Right Thrust Reverser

78-36-01-02A RDCs 2 and 4 Operate Normally

Interval	Installed	Required	Procedure
C	4	3	**(P)**

One may be inoperative provided:

a. Remote data concentrator 2 operates normally.
b. Remote data concentrator 4 operates normally.

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78-36-01 **Thrust Reverser Locking Actuator Proximity Sensors**
78-36-01-02 **Right Thrust Reverser**

78-36-01-02B **RDCs 2 or 4 Fault**

Interval	Installed	Required	Procedure
C	4	3	**(P)**

One may be inoperative provided:
a. Right thrust reverser is considered inoperative.

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Note:
1. RDCs are interchangeable. See MEL Item 42-21-02-04A.
2. For CCS RDC 2 FAULT or CCS RDC 4 FAULT status messages displayed, the airplane must also be dispatched using MEL Item 78-31-01 for the right thrust reverser.

Table of Contents

ATA 79 ENGINE OIL .... ATA 79-1
Table Of Contents .... ATA 79-1
79-21-01 Engine Oil Cooler Bypass Valves .... ATA 79-2
79-22-01 Engine Oil Debris Sensor (ODS) .... ATA 79-3
79-31-01 Engine Oil Quantity Indicating Systems .... ATA 79-4
79-35-01 Engine Oil Filter Differential Pressure Systems .... ATA 79-5
  79-35-01-01 Pressure Oil Filters .... ATA 79-5
  79-35-01-02 Scavenge Oil Filters .... ATA 79-6

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79-21-01 Engine Oil Cooler Bypass Valves

Interval	Installed	Required	Procedure
C	2	0	**(O) (P)**

May be inoperative open provided:

a. Fuel temperature is below the appropriate limits before takeoff.

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OPERATIONS (O)

1. Ensure fuel temperature is below 24 degrees C before takeoff.

79-22-01 Engine Oil Debris Sensor (ODS)

Interval	Installed	Required	Procedure
C	2	1	**(M) (P)**

One may be inoperative provided:

a. Inoperative ODS is checked for contaminants.
b. Associated engine oil filter differential pressure systems operate normally.

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MAINTENANCE (M)

Check the inoperative oil debris sensor (ODS) for contaminants (AMM DDG 79-22-01)

79-31-01 Engine Oil Quantity Indicating Systems

Interval	Installed	Required	Procedure
A	2	0	**(M) (P)**

One may be inoperative provided:

a. Before each departure, verify the associated engine oil tank is filled to the recommended capacity.
b. Oil consumption is within limits.
c. Repairs are made within three flight days.

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MAINTENANCE (M)

Review engine records to verify that oil consumption is within limits and before each departure, verify that oil level is filled to the recommended level (AMM DDG 79-31-01).

1. Review engine records to verify that oil consumption is within engine manufacturer's limits or THAI approved limits (if more restrictive).
2. Before each departure, verify the associated engine oil tank is filled to the recommended capacity.

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79-35-01 Engine Oil Filter Differential Pressure Systems

79-35-01-01 Pressure Oil Filters

Interval	Installed	Required	Procedure
C	2	0	**(P)**

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79-35-01 Engine Oil Filter Differential Pressure Systems

79-35-01-02 Scavenge Oil Filters

Interval	Installed	Required	Procedure
C	2	1	**(P)**

One may be inoperative provided:

a. The associated engine oil debris sensor (ODS) operates normally.

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Table of Contents

ATA 80 **STARTING** . . . . **ATA 80-1**
Table Of Contents . . . . **ATA 80-1**
80-11-01 **Start Selector Holding/Cutout Systems** . . . . **ATA 80-2**

80-11-01 Start Selector Holding/Cutout Systems

Interval	Installed	Required	Procedure
C	2	0	**(O) (P)**

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OPERATIONS (O)

1. Set START selector to START and hold if required
2. Set START selector to NORM when RUNNING is displayed.

Table of Contents

Section 3

CONFIGURATION DEVIATION LIST (CDL) ITEMS .... Section 3-1
Table Of Contents .... Section 3-1
Introduction .... Section 3-2
  CDL Definitions .... Section 3-2
  Limitations .... Section 3-2
  Weight Reductions .... Section 3-3
  Enroute Diversion Speed Effects .... Section 3-3
  Enroute Fuel Mileage Effects .... Section 3-3

Introduction

CDL Definitions

1. Item Definitions. Item numbers are based on the Air Transport Association (ATA) Specification Number 100 and are numbered sequentially.
   - A. "Item" means the equipment or component listed in the Item Heading.
   - B. "Number Installed" (**Installed**) is the number (quantity) of items normally installed in the aircraft.
   - C. "Number Required for Dispatch" (**Required**) is the minimum number (quantity) of items required for operation provided the conditions specified are met. "See below" indicates a variable number (quantity) of required item and the condition(s) for dispatch is stated in the Remarks or Exeptions statement(s) immediately below the required column.
   - D. "Remarks or Exceptions" includes a statement either prohibiting or permitting operation with a specific number of items/components missing, provisos (conditions and limitations) for such operation, and appropriate notes. "Notes:" provides additional information for crewmember or maintenance consideration. Notes are used to identify applicable material which is intended to assist with compliance, but do not relieve THAI of the responsibility for compliance with all applicable requirements. Notes are not a part of the provisos.
2. "(M)" symbol indicates a requirement for a specific maintenance procedure which must be accomplished prior to operation with the listed item(s) missing.
3. "(O)" symbol indicates a requirement for a specific operations procedure which must be accomplished in planning for and/or operating with the listed item(s) missing.
4. "(MV)" symbol indicates a MAINTAVI message must be sent as soon as possible to inform appropriate departments of the applicable performance penalty/limitations.
5. "N/A" symbol in the **Interval** column indicates repair interval category is not applicable for CDL items.
6. "N/A" symbol in the **Procedure** column indicates procedure does not exist for the associated CDL items.

Limitations

The associated limitations must be listed on a placard affixed in the cockpit in clear view of the P-i-C and other appropriate crew members.

Operation with those missing parts requiring a reduction of VMO/MMO is permitted only when the airplane has the maximum airspeed limit indication and the Mach airspeed warning system programmed for the altitude/speed schedule specified for the applicable missing part..

The P-i-C will be notified of each operation with a missing parts by listing the missing parts in the flight or dispatch release. Maintenance will list in the aircraft logbook an appropriate notation covering the missing parts on each flight.

If an additional part is lost in flight the airplane may not depart the airport at which it landed following this event until it again complies with CDL limitations. This, does not preclude the issuance of a ferry permit to allow the airplane to be flown to a point where the necessary repairs or replacements can be made.

Unless otherwise specified, combinations of parts from any system or sub-systems may be missing. Combinations of parts from systems or sub-systems that are not allowed will be specifically listed in the CDL.

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Weight Reductions

The takeoff performance decrements are to be applied to the performance limited takeoff weights determined from:

- Field length, first segment climb, second segment climb, final segment climb, or obstacles in the takeoff flight path.

The enroute performance decrements are to be applied to the weight limit determined from:

- Enroute, one-engine-inoperative climb performance.

The landing performance decrements are to be applied to the performance limited landing weights determined from:

- Landing field length, landing climb, or approach climb.

The performance penalties are cumulative unless specifically designated penalties for combination of missing parts are indicated. Where performance penalties are listed as negligible, no more than three negligible items may be missing without taking further penalty. For each missing item more than three, reduce the takeoff, landing and enroute climb limits by 46 kg. Where performance penalties are listed as no penalty, any accumulative number of items listed as no penalty may be missing without further penalty.

Enroute Diversion Speed Effects

The enroute climb weight penalties listed are based on operating speeds that approximate the maximum lift-to-drag ratio speed. To account for the difference in level off altitude when operating at other speeds, multiply the enroute climb weight penalty listed by the following appropriate factor:

Diversion Speed	Factor
LRC	1.9
280 KIAS	2.5
300 KIAS	3.5
320 KIAS	4.3
340 KIAS	5.2

Enroute Fuel Mileage Effects

The drag effects of many CDL items are so small that the changes in flight planning fuel are negligible. For items that have enroute climb weight penalties listed, an increase in flight planning fuel of 0.44% per 454 kg of enroute climb weight penalty (non-factored penalty) may be used to account for the drag increase. However, the increase in flight planning fuel of less than 0.5% can be considered negligible.

UNCONTROLLED IF DOWNLOADED OR PRINTED

Table of Contents

ATA 21 **AIR CONDITIONING** .... **ATA 21-1**
Table Of Contents .... **ATA 21-1**
21-31-01 **Cabin Pressure Control System Outflow Valve Doors** .... **ATA 21-2**
21-32-01 **Negative Pressure Relief Valve Door** .... **ATA 21-4**

21-31-01 Cabin Pressure Control System Outflow Valve Doors

Interval	Installed	Required	Procedure
N/A	2	See below	**N/A**

Any number may be missing.

a. The associated outflow valve must be considered inoperative.

Note: The airplane must be dispatched using MEL Item 21-31-03.

b. Reduce performance limited weights for any number missing by:

OPERATIONS (O)

TAKE-OFF

Negligible

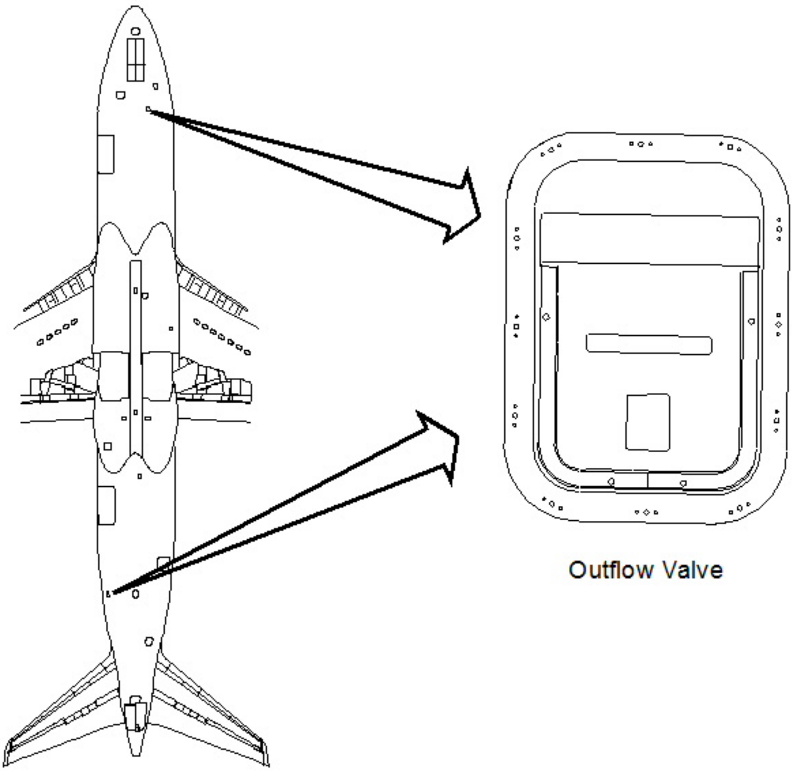
ENROUTE CLIMB

Negligible

APPROACH AND LANDING

Negligible

LOCATION



Outflow Valve

21-32-01 Negative Pressure Relief Valve Door

Interval	Installed	Required	Procedure
N/A	4	See below	**N/A**

Any number may be missing.

a. The associated negative pressure valve must be considered inoperative.

Note: The airplane must be dispatched using MEL Item 21-31-02.

b. Reduce performance limited weights for any number of missing doors by:

--------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • ---------

OPERATIONS (O)

TAKE-OFF

Negligible

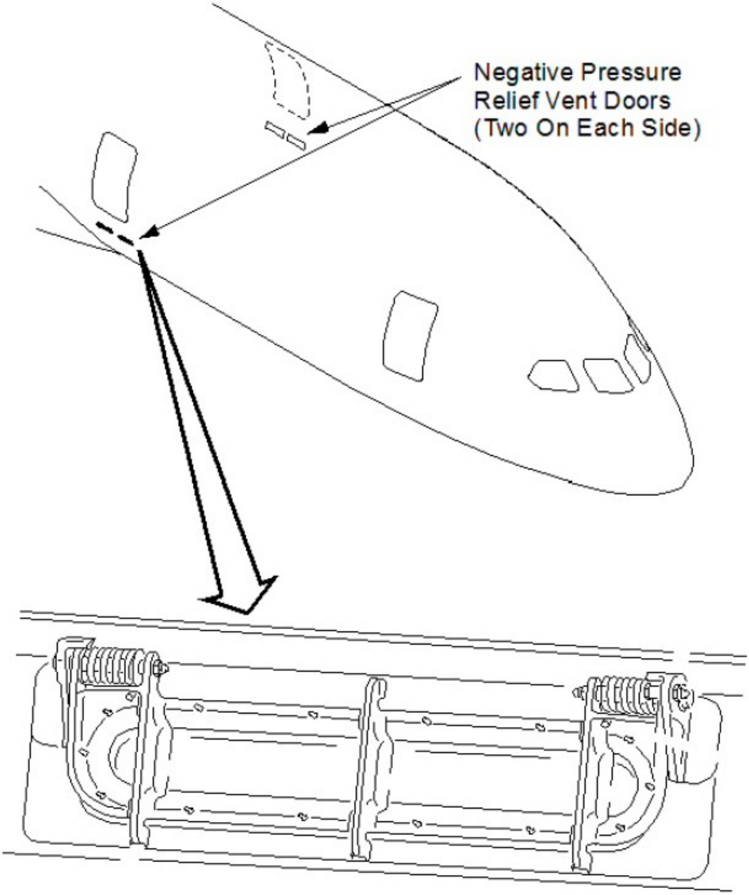
ENROUTE CLIMB

Negligible

APPROACH AND LANDING

Negligible

LOCATION


Negative Pressure Relief Vent Doors (Two On Each Side)

Negative Pressure Relief Valve Doors
(Internal View)

Table of Contents

ATA 23 **COMMUNICATIONS** .... **ATA 23-1**
Table Of Contents .... **ATA 23-1**
23-61-01 **Static Discharger** .... **ATA 23-2**

23-61-01 Static Discharger

Interval	Installed	Required	Procedure
N/A	54	See below	**N/A**

For all airplane operations, a maximum of 27 dischargers may be missing with the following exceptions:

a. 3 of the 6 most outboard trailing type dischargers on each wing may not be missing.
b. 3 of the 5 most outboard trailing type dischargers on each horizontal stabilizer may not be missing.
c. 3 of the 5 top most trailing type dischargers on the vertical stabilizer may not be missing.
d. A minimum of 5 tip type dischargers, one on each wing tip, and one on each stabilizer tip must be installed.

Note: For operations with wing tips removed (CDL Item 57-31-01), the four trailing type dischargers on each wing just inboard of the removable tip may not be missing. The most outboard remaining trailing type discharger counts as the required tip type discharger.

e. Reduce performance limited weights for any number missing by:

--------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • ---------

OPERATIONS (O)

TAKE-OFF

No decrement

ENROUTE CLIMB

No decrement

APPROACH AND LANDING

No decrement

LOCATION

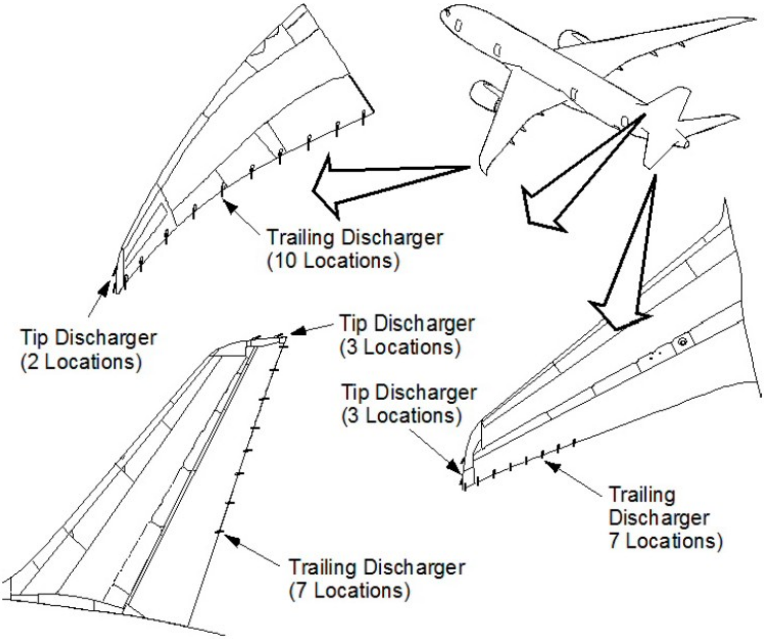

Trailing Discharger
(10 Locations)
Tip Discharger
(2 Locations)
Tip Discharger
(3 Locations)
Tip Discharger
(3 Locations)
Trailing
Discharger
7 Locations)
Trailing Discharger
(7 Locations)

Table of Contents

ATA 32 **LANDING GEAR** . . . . . ATA 32-1

Table Of Contents . . . . . ATA 32-1

32-12-01 Main Landing Gear (Body) Door Seals . . . . . ATA 32-2
  32-12-01-01 787-8 . . . . . ATA 32-2
  32-12-01-02 787-9 . . . . . ATA 32-4

32-12-02 Main Landing Gear Drag Brace Door, Trunnion Door, Strut Door And Lower Strut Door Seals . ATA 32-6
  32-12-02-01 787-8 . . . . . ATA 32-6
  32-12-02-02 787-9 . . . . . ATA 32-8

32-12-03 Main Landing Gear Strut Door . . . . . ATA 32-10
  32-12-03-01 787-8 . . . . . ATA 32-10
  32-12-03-02 787-9 . . . . . ATA 32-12

32-12-04 Main Landing Gear Lower Strut Door . . . . . ATA 32-14
  32-12-04-01 787-8 . . . . . ATA 32-14
  32-12-04-02 787-9 . . . . . ATA 32-16

32-12-05 Main Landing Gear Trunnion Door . . . . . ATA 32-18
  32-12-05-01 787-8 . . . . . ATA 32-18
  32-12-05-02 787-9 . . . . . ATA 32-20

32-12-06 Main Landing Gear Drag Brace Door . . . . . ATA 32-22
  32-12-06-01 787-8 . . . . . ATA 32-22
  32-12-06-02 787-9 . . . . . ATA 32-24

32-22-01 Forward Nose Landing Gear Door Seals . . . . . ATA 32-26

32-22-02 Aft Nose Landing Gear Door Seals . . . . . ATA 32-28

32-42-01 Main Landing Gear Axle Remote Data Concentrator . . . . . ATA 32-30

32-12-01 Main Landing Gear (Body) Door Seals

32-12-01-01 787-8

TQA to TQF

Interval	Installed	Required	Procedure
N/A	26	See below	**(O) (MV)**

Eight per door may be missing, for a total length of 21.25 feet, may be missing:

a. Landing gear remains extended for 10 minutes after takeoff and the takeoff performance adjustment is applied.

b. Seals along the inboard edge of the door (2 seals per door) and the forward edge of the door inboard of the door vent (3 seals per door) may not be missing.

c. Procedure:

    1) Do not retract landing gear for 10 minutes after takeoff. In the event of an engine failure after V1, retract the landing gear until a minimum of 1,500 feet above airport elevation and terrain clearance is assured. While maintaining terrain clearance, extend the gear for the balance of the 10 minutes.

d. Increase flight planning fuel by 1,225 kg for landing gear extended for 10 minutes.

e. Reduce (Takeoff) performance limited weights for any amount of seal missing by:

f. Reduce (Enroute Climb and Approach & Landing) performance limited weights for each foot of missing seal by:

--------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • ---------

OPERATIONS (O)

TAKE-OFF

4,990 kg

ENROUTE CLIMB

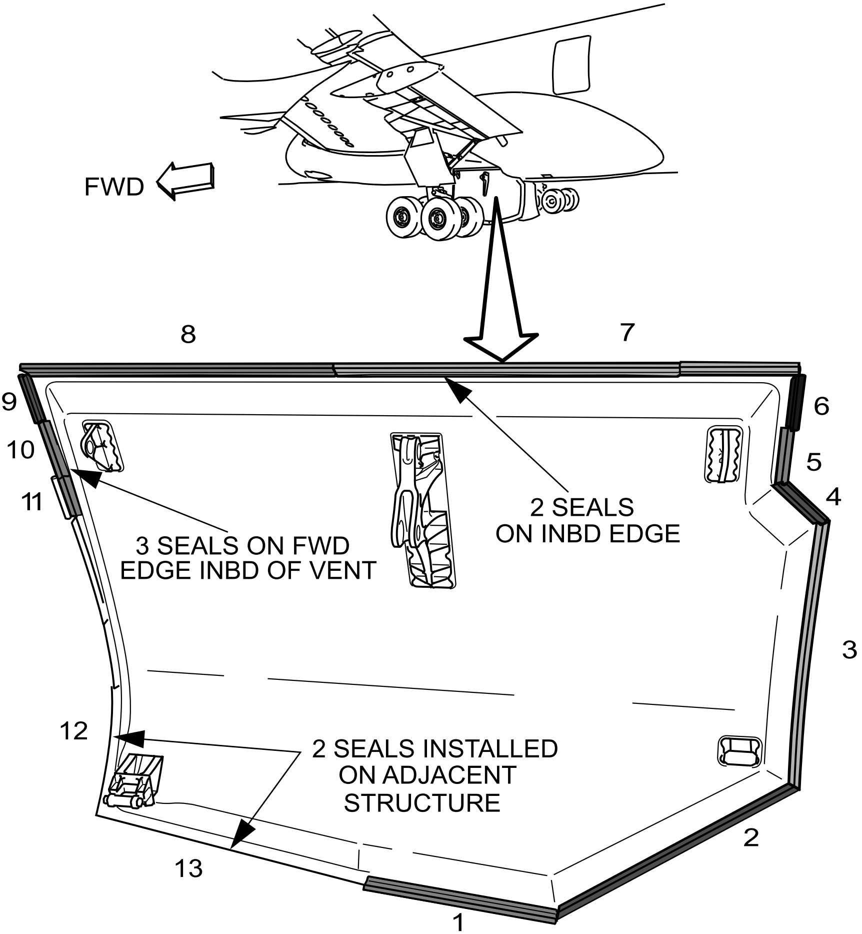
68 kg

APPROACH AND LANDING

23

Note: The CDL penalty for seals missing is negligible and the above procedure does not apply when operating with Gear Down Dispatch data in Performance Dispatch (PD) chapter for the entire flight

LOCATION


FWD
8
7
9
10
11
6
5
4
3
2
1
12
13
3 SEALS ON FWD EDGE INBD OF VENT
2 SEALS ON INBD EDGE
2 SEALS INSTALLED ON ADJACENT STRUCTURE

787-8 MAIN LANDING GEAR (BODY) DOOR SEALS

32-12-01 Main Landing Gear (Body) Door Seals

32-12-01-02 **787-9** **TWA to TWB**

Interval	Installed	Required	Procedure
N/A	24	See below	**(O) (MV)**

Eight per door may be missing, for a total length of 21.25 feet, may be missing:

a. Landing gear remains extended for 10 minutes after takeoff and takeoff performance adjustment is applied.
b. Seals along the inboard edge of the door (2 seals per door) and the forward edge of the door inboard of the door vent (2 seals per door) may not be missing.
c. Procedure:
   1) Do not retract landing gear for 10 minutes after takeoff. In the event of an engine failure after V1, retract the landing gear until a minimum of 1,500 feet above airport elevation and terrain clearance is assured. While maintaining terrain clearance, extend the gear for the balance of the 10 minutes.
d. Increase flight planning fuel by 1,315 kg for landing gear extended for 10 minutes.
e. Reduce (Takeoff) performance limited weights for any amount of seal missing by:
f. Reduce (Enroute Climb and Approach & Landing) performance limited weights for each foot of missing seal by:

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OPERATIONS (O)

TAKE-OFF

907 kg

Note: The minimum takeoff penalty for this item is 907 kg. The higher of either the minimum penalty or the calculated penalty for seal missing must be used. The penalty for a missing seal is 68 kg/foot. When more than 13 feet, 4 inches of seal is missing, the penalty must be calculated based on the amount of seal missing.

ENROUTE CLIMB

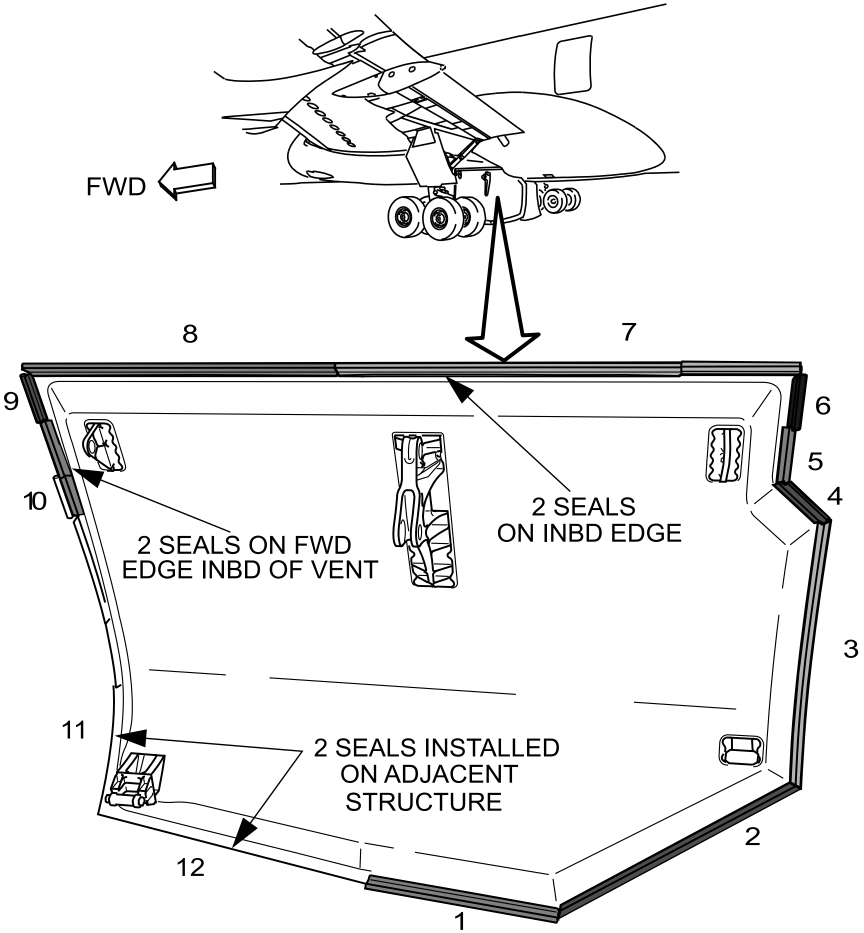
68 kg

APPROACH AND LANDING

23

Note: The CDL penalty for seals missing is negligible and the above procedure does not apply when operating with Gear Down Dispatch data in Performance Dispatch (PD) chapter for the entire flight.

LOCATION


FWD
8
7
9
6
5
4
10
3
11
12
2
1
2 SEALS ON FWD EDGE INBD OF VENT
2 SEALS ON INBD EDGE
2 SEALS INSTALLED ON ADJACENT STRUCTURE

787-9 MAIN LANDING GEAR (BODY) DOOR SEALS

32-12-02 Main Landing Gear Drag Brace Door, Trunnion Door, Strut Door and Lower Strut Door Seals

32-12-02-01 787-8

TQA to TQF

Interval	Installed	Required	Procedure
N/A	42	See below	**(O) (MV)**

A maximum of 6.25 feet of seal may be missing.

a. Reduce performance limited weights for each foot of missing seal by:

--------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • ---------

OPERATIONS (O)

TAKE-OFF

45 kg

ENROUTE CLIMB

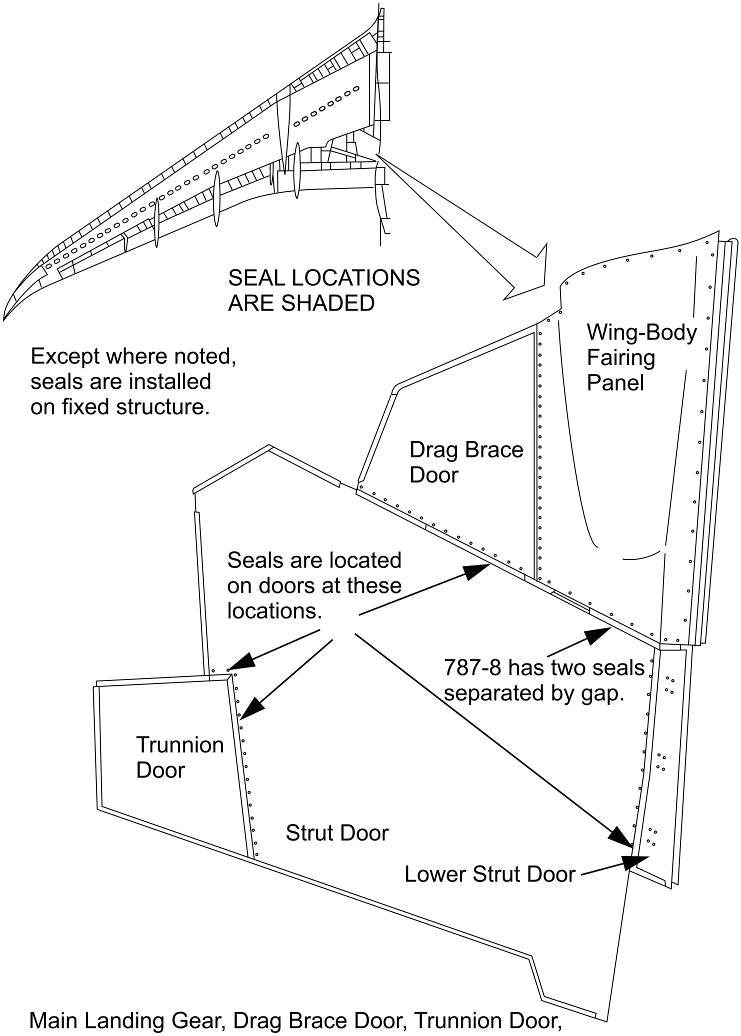
68 kg

APPROACH

23 kg

Note: The CDL penalty for seals missing is negligible when operating with Gear Down Dispatch data in Performance Dispatch (PD) chapter for the entire flight.

LOCATION


SEAL LOCATIONS
ARE SHADED
Except where noted,
seals are installed
on fixed structure.
Wing-Body
Fairing
Panel
Drag Brace
Door
Seals are located
on doors at these
locations.
787-8 has two seals
separated by gap.
Trunnion
Door
Strut Door
Lower Strut Door

Main Landing Gear, Drag Brace Door, Trunnion Door, Strut Door and Lower Strut Door Seals

32-12-02 Main Landing Gear Drag Brace Door, Trunnion Door, Strut Door and Lower Strut Door Seals

32-12-02-02 **787-9** **TWA to TWB**

Interval	Installed	Required	Procedure
N/A	40	See below	**(O) (MV)**

A maximum of 6.25 feet of seal may be missing.

a. Reduce performance limited weights for each foot of missing seal by:

OPERATIONS (O)

TAKE-OFF

68 kg

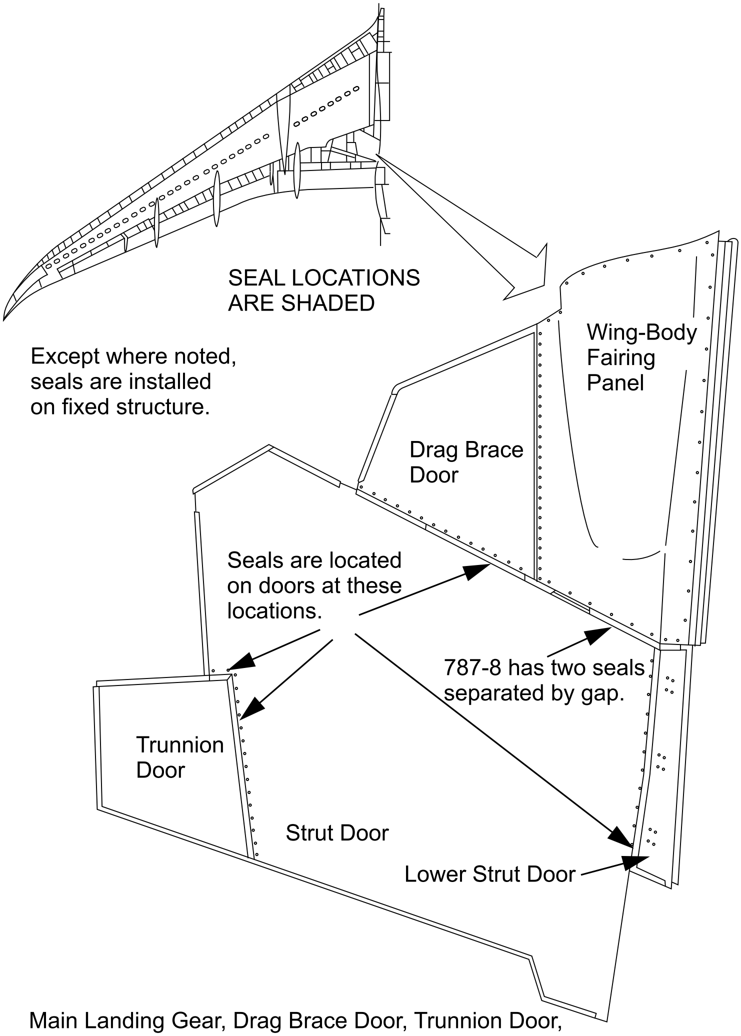
ENROUTE CLIMB

68 kg

APPROACH

23 kg

LOCATION


SEAL LOCATIONS
ARE SHADED
Except where noted,
seals are installed
on fixed structure.
Wing-Body
Fairing
Panel
Drag Brace
Door
Seals are located
on doors at these
locations.
787-8 has two seals
separated by gap.
Trunnion
Door
Strut Door
Lower Strut Door

Main Landing Gear, Drag Brace Door, Trunnion Door, Strut Door and Lower Strut Door Seals

32-12-03 Main Landing Gear Strut Door

32-12-03-01 **787-8** **TQA to TQF**

Interval	Installed	Required	Procedure
N/A	2	See below	**(O) (MV)**

One may be missing provided:

a. Gear remains extended for 10 minutes after takeoff and takeoff performance adjustment is applied. Main landing gear strut door may not be missing in combination with main landing gear drag brace door or main landing gear trunnion door.

Note: Main landing gear lower strut door(s) will also be missing. Additional performance decrements for lower strut doors are not required.

b. When the shock strut door is removed, the bolts attaching the strut door to the strut must remain on the shock strut.

c. Limit speed to 270 KIAS/0.73 Mach.

d. On the MISC SYSTEM CTRLS (MSC) maintenance page, set the Overspeed Warning switch to GEAR DOWN.

e. Procedure:

   1. Do not retract landing gear for 10 minutes after takeoff. In the event of an engine failure after V1, retract the landing gear until a minimum of 1,500 feet above airport elevation and terrain clearance is assured. While maintaining terrain clearance, extend the gear for the balance of the 10 minutes.

f. Increase flight planning fuel by 1,225 kg for landing gear extended for 10 minutes.

g. Reduce performance limited weights by:

--------- • --------- • --------- • ---------

OPERATIONS (O)

TAKE-OFF

4,990 kg

ENROUTE CLIMB

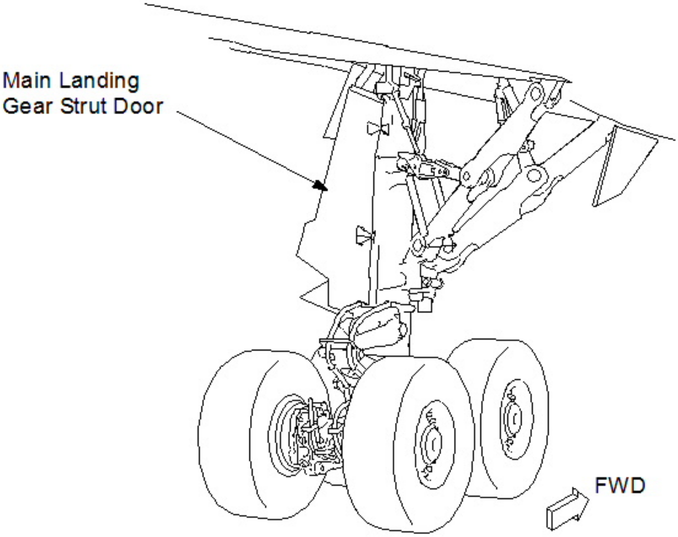
953 kg

APPROACH AND LANDING

363 kg

Note: The CDL penalty for a missing door is zero and the above procedure does not apply when operating with Gear Down Dispatch data in Performance Dispatch (PD) chapter for the entire flight.

LOCATION


Main Landing
Gear Strut Door
FWD

32-12-03 Main Landing Gear Strut Door

32-12-03-02 **787-9**

TWA to TWB

Interval	Installed	Required	Procedure
N/A	2	See below	**(O) (MV)**

One may be missing provided:

a. Gear remains extended for 10 minutes after takeoff and takeoff performance adjustment is applied. Main landing gear strut door may not be missing in combination with main landing gear drag brace door or main landing gear trunnion door.

Note: Main landing gear lower strut door(s) will also be missing. Additional performance decrements for lower strut doors are not required.

b. When the shock strut door is removed, the bolts attaching the strut door to the strut must remain on the shock strut.

c. Limit speed to 270 KIAS/0.73 Mach.

d. On the MISC SYSTEM CTRLS (MSC) maintenance page, set the Overspeed Warning switch to GEAR DOWN.

e. Procedure:

   1) Do not retract landing gear for 10 minutes after takeoff. In the event of an engine failure after V1, retract the landing gear until a minimum of 1,500 feet above airport elevation and terrain clearance is assured. While maintaining terrain clearance, extend the gear for the balance of the 10 minutes.

f. Increase flight planning fuel by 1,315 kg for landing gear extended for 10 minutes.

g. Reduce performance limited weights by:

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OPERATIONS (O)

TAKE-OFF

1,270 kg

ENROUTE CLIMB

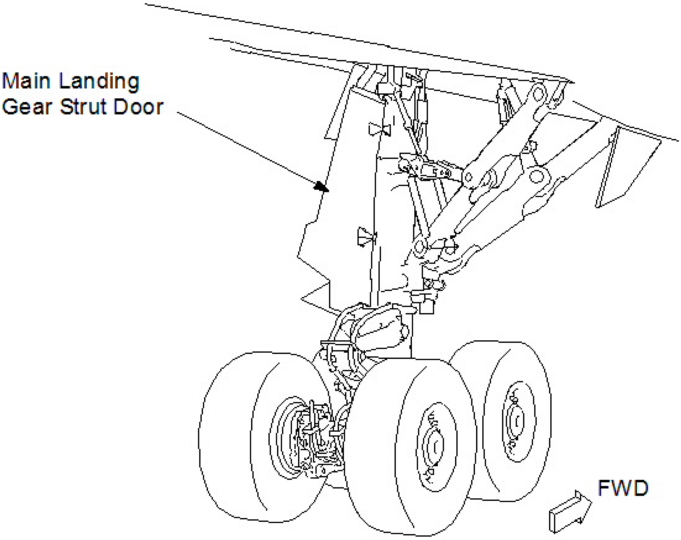
975 kg

APPROACH AND LANDING

363 kg

Note: The CDL penalty for a missing door is zero when operating and the above procedure does not apply with Gear Down Dispatch data in Performance Dispatch (PD) chapter for the entire flight.

LOCATION


Main Landing Gear Strut Door
FWD

32-12-04 Main Landing Gear Lower Strut Door

32-12-04-01 787-8

TQA to TQF

Interval	Installed	Required	Procedure
N/A	2	See below	**(O) (MV)**

One or both on one side may be missing provided:

a. Gear remains extended for 10 minutes after takeoff and the takeoff performance adjustment is applied. Main landing gear lower strut door may not be missing in combination with main landing gear drag brace door or main landing gear trunnion door.

b. Limit speed to 270 KIAS/0.73 Mach.

c. On the MISC SYSTEM CTRLS (MSC) maintenance page, set the Overspeed Warning switch to GEAR DOWN.

d. Procedure:

   1) Do not retract landing gear for 10 minutes after takeoff. In the event of an engine failure after V1, retract the landing gear until a minimum of 1,500 feet above airport elevation and terrain clearance is assured. While maintaining terrain clearance, extend the gear for the balance of the 10 minutes.

d. No additional weight reductions relative to Gear Down Dispatch calculations in Performance Dispatch (PD) chapter are required for the 787-8.

e. Increase flight planning fuel by 1,225 kg for landing gear extended for 10 minutes.

f. Reduce performance limited weights by:

Note: The 787-8 has one MLG Lower Strut Door per side.

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OPERATIONS (O)

TAKE-OFF

4,990 kg

ENROUTE CLIMB

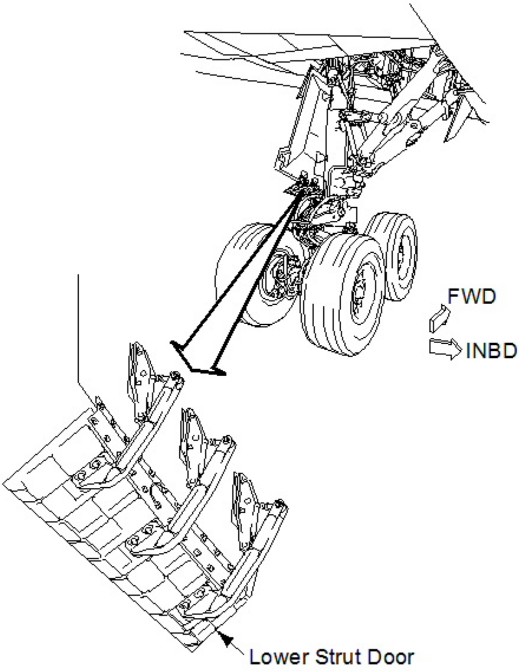
227 kg

APPROACH AND LANDING

91 kg

Note: The CDL penalty for a missing door is zero and the above procedure does not apply when operating with Gear Down Dispatch data in Performance Dispatch (PD) chapter for the entire flight.

LOCATION


FWD
INBD
Lower Strut Door

32-12-04 Main Landing Gear Lower Strut Door

32-12-04-02 **787-9** **TWA to TWB**

Interval	Installed	Required	Procedure
N/A	2	See below	**(O) (MV)**

One or both on one side may be missing provided:

a. Gear remains extended for 10 minutes after takeoff and the takeoff performance adjustment is applied. Main landing gear lower strut door may not be missing in combination with main landing gear drag brace door or main landing gear trunnion door.

b. Limit speed to 270 KIAS/0.73 Mach.

c. On the MISC SYSTEM CTRLS (MSC) maintenance page, set the Overspeed Earning switch to GEAR DOWN.

d. Procedure:

  1) Do not retract landing gear for 10 minutes after takeoff. In the event of an engine failure after V1, retract the landing gear until a minimum of 1,500 feet above airport elevation and terrain clearance is assured. While maintaining terrain clearance, extend the gear for the balance of the 10 minutes.

e. Apply the takeoff performance adjustment provided in the Gear Down Dispatch data in Performance Dispatch (PD) chapter for main gear door opening not deactivated.

f. Increase flight planning fuel by 1,315 kg for landing gear extended for 10 minutes.

g. Reduce performance limited weights by:

Note: The 787-9 has one MLG Lower Strut Door per side.

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OPERATIONS (O)

TAKE-OFF

907 kg

ENROUTE CLIMB

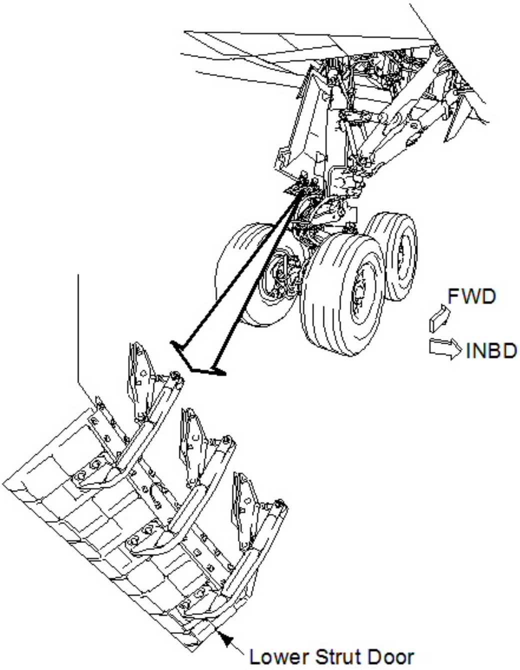
227 kg

APPROACH AND LANDING

91 kg

Note: The CDL penalty for a missing door is zero and the above procedure does not apply when operating with Gear Down Dispatch data in Performance Dispatch (PD) chapter for the entire flight.

LOCATION


FWD
INBD
Lower Strut Door

32-12-05 Main Landing Gear Trunnion Door

32-12-05-01 787-8

TQA to TQF

Interval	Installed	Required	Procedure
N/A	2	See below	**(O) (MV)**

One may be missing provided:

a. Gear remains extended for 10 minutes after takeoff and the takeoff performance adjustment is applied. Main landing gear trunnion door may not be missing in combination with main landing gear strut door or main landing gear lower strut door or main landing gear drag brace door.

b. Limit speed to 270 KIAS/0.73 Mach.

c. On the MISC SYSTEM CTRLS (MSC) maintenance page, set the Overspeed Warning switch to GEAR DOWN.

d. Procedure:

   1) Do not retract landing gear for 10 minutes after takeoff. In the event of an engine failure after V1, retract the landing gear until a minimum of 1,500 feet above airport elevation and terrain clearance is assured. While maintaining terrain clearance, extend the gear for the balance of the 10 minutes.

e. No additional weight reductions relative to Gear Down Dispatch calculations in Performance Dispatch (PD) chapter are required for the 787-8.

f. Increase flight planning fuel by 1,225 kg for landing gear extended for 10 minutes.

g. Reduce performance limited weights by:

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OPERATIONS (O)

TAKE-OFF

4,990 kg

ENROUTE CLIMB

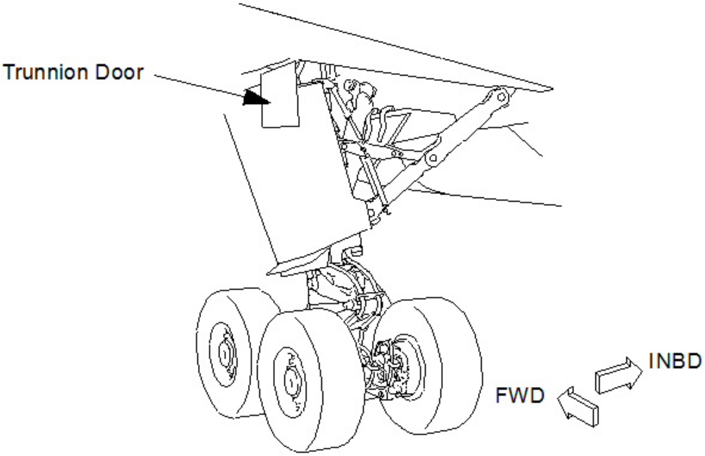
249 kg

APPROACH AND LANDING

113 kg

Note: The CDL penalty for a missing door is zero and the above procedure does not apply when operating with Gear Down Dispatch data in Performance Dispatch (PD) chapter for the entire flight.

LOCATION


Trunnion Door
INBD
FWD

32-12-05 Main Landing Gear Trunnion Door

32-12-05-02 **787-9** **TWA to TWB**

Interval	Installed	Required	Procedure
N/A	2	See below	**(O) (MV)**

One may be missing provided:

a. Gear remains extended for 10 minutes after takeoff and the takeoff performance adjustment is applied. Main landing gear trunnion door may not be missing in combination with main landing gear strut door or main landing gear lower strut door or main landing gear drag brace door.

b. Limit speed to 270 KIAS / 0.73 Mach.

c. On the MISC SYSTEM CTRLS (MSC) maintenance page, set the Overspeed Warning switch to GEAR DOWN.

d. Procedure:

  1) Do not retract landing gear for 10 minutes after takeoff. In the event of an engine failure after V1, retract the landing gear until a minimum of 1,500 feet above airport elevation and terrain clearance is assured. While maintaining terrain clearance, extend the gear for the balance of the 10 minutes.

e. Apply the takeoff performance adjustment provided in the Gear Down Dispatch data in Performance Dispatch (PD) chapter for main gear door opening not deactivated.

f. Increase flight planning fuel by 1,315 kg for landing gear extended for 10 minutes.

g. Reduce performance limited weights by:

OPERATIONS (O)

TAKE-OFF

907 kg

ENROUTE CLIMB

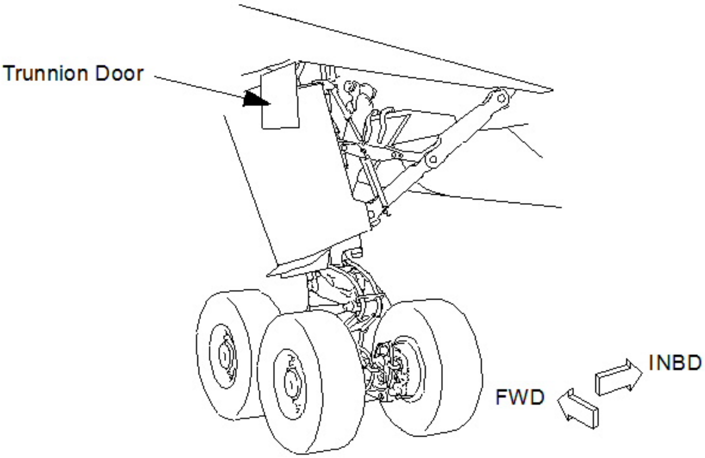
272 kg

APPROACH AND LANDING

113 kg

Note: The CDL penalty for a missing door is zero and the above procedure does not apply when operating with Gear Down Dispatch data in Performance Dispatch (PD) chapter for the entire flight.

LOCATION


Trunnion Door
INBD
FWD

32-12-06 Main Landing Gear Drag Brace Door

32-12-06-01 787-8

TQA to TQF

Interval	Installed	Required	Procedure
N/A	2	See below	**(O) (MV)**

One may be missing provided:

a. Gear remains extended for 10 minutes after takeoff and the takeoff performance adjustment is applied. Main landing gear drag brace door may not be missing in combination with main landing gear strut door or main landing gear lower strut door or main landing gear trunnion door.

b. Limit speed to 270 KIAS/0.73 Mach.

c. On the MISC SYSTEM CTRLS (MSC) maintenance page, set the Overspeed Warning switch to GEAR DOWN.

d. Procedure:

   1) Do not retract landing gear for 10 minutes after takeoff. In the event of an engine failure after V1, retract the landing gear until a minimum of 1,500 feet above airport elevation and terrain clearance is assured. While maintaining terrain clearance, extend the gear for the balance of the 10 minutes.

e. No additional weight reductions relative to Gear Down Dispatch calculations data in Performance Dispatch (PD) chapter are required for the 787-8.

f. Increase flight planning fuel by 1,225 kg for landing gear extended for 10 minutes.

g. Reduce performance limited weights by:

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OPERATIONS (O)

TAKE-OFF

4,990 kg

ENROUTE CLIMB

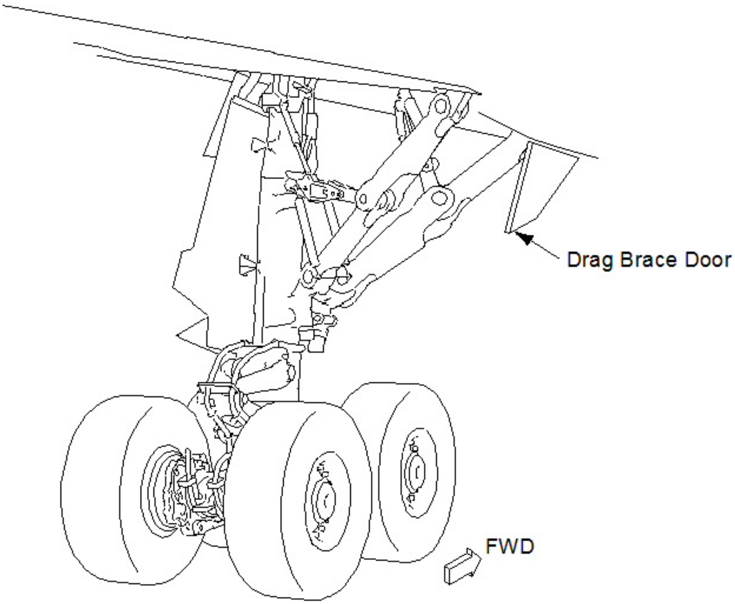
227 kg

APPROACH AND LANDING

91 kg

Note: The CDL penalty for a missing door is zero and the above procedure does not apply when operating with Gear Down Dispatch data in Performance Dispatch (PD) chapter for the entire flight.

LOCATION


Drag Brace Door
FWD

32-12-06 **Main Landing Gear Drag Brace Door**

32-12-06-02 **787-9** **TWA to TWB**

Interval	Installed	Required	Procedure
N/A	2	See below	**(O) (MV)**

One may be missing provided:

a. Gear remains extended for 10 minutes after takeoff and the takeoff performance adjustment is applied. Main landing gear drag brace door may not be missing in combination with main landing gear strut door or main landing gear lower strut door or main landing gear trunnion door.

b. Limit speed to 270 KIAS/0.73 Mach.

c. On the MISC SYSTEM CTRLS (MSC) maintenance page, set the Overspeed Warning switch to GEAR DOWN.

d. Procedure:

   1) Do not retract landing gear for 10 minutes after takeoff. In the event of an engine failure after V1, retract the landing gear until a minimum of 1,500 feet above airport elevation and terrain clearance is assured. While maintaining terrain clearance, extend the gear for the balance of the 10 minutes.

e. Apply the takeoff performance adjustment provided in the Gear Down Dispatch data in Performance Dispatch (PD) chapter for main gear door opening not deactivated.

f. Increase flight planning fuel by 1,315 kg for landing gear extended for 10 minutes.

g. Reduce performance limited weights by:

--------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • ---------

OPERATIONS (O)

TAKE-OFF

907 kg

ENROUTE CLIMB

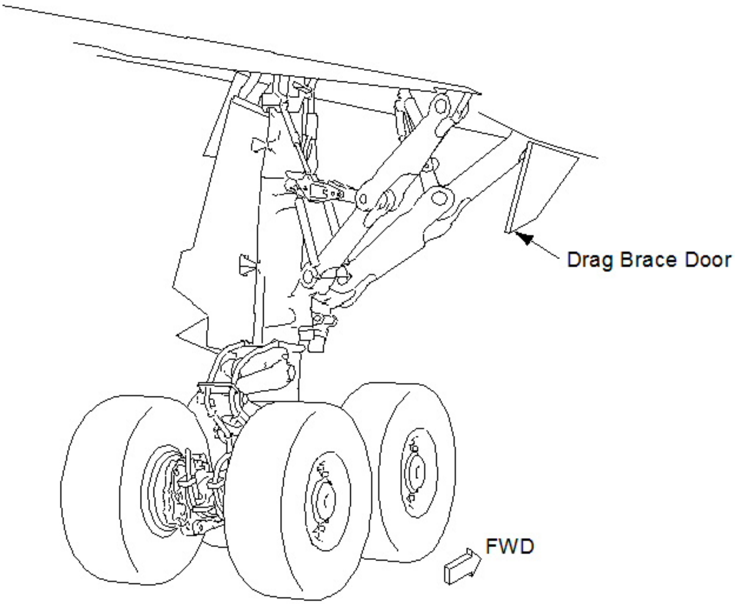
249 kg

APPROACH AND LANDING

91 kg

Note: The CDL penalty for a missing door is zero and the above procedure does not apply when operating with Gear Down Dispatch data in Performance Dispatch (PD) chapter for the entire flight.

LOCATION


Drag Brace Door
FWD

32-22-01 Forward Nose Landing Gear Door Seals

Interval	Installed	Required	Procedure
N/A	8	See below	**(O) (MV)**

Any number may be missing.

a. Reduce performance limited weights for each foot of missing seal by:

--------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • ---------

OPERATIONS (O)

TAKE-OFF

23 kg

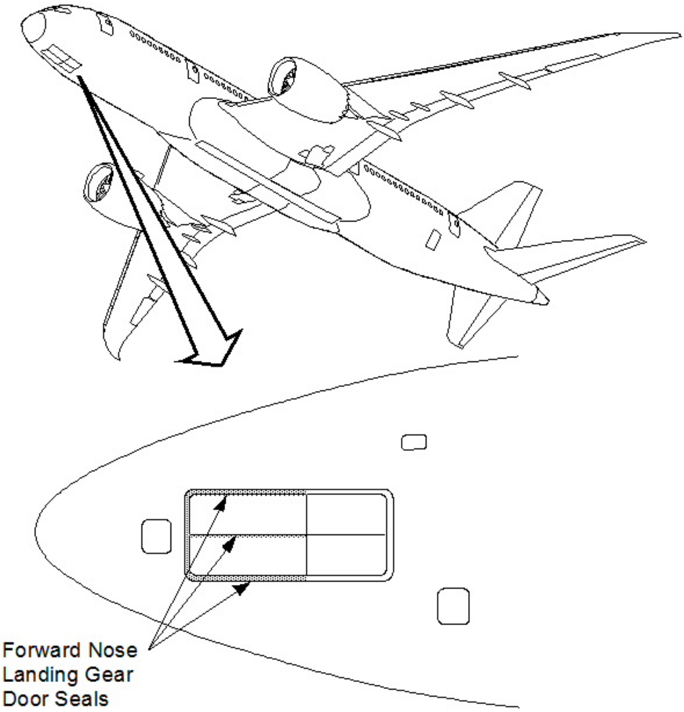
ENROUTE CLIMB

23 kg

APPROACH

23 kg

LOCATION


Forward Nose
Landing Gear
Door Seals

32-22-02 Aft Nose Landing Gear Door Seals

Interval	Installed	Required	Procedure
N/A	12	See below	**(O) (MV)**

Any number may be missing.

a. Reduce performance limited weights for each foot of missing seal by:

--------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • ---------

OPERATIONS (O)

TAKE-OFF

23 kg

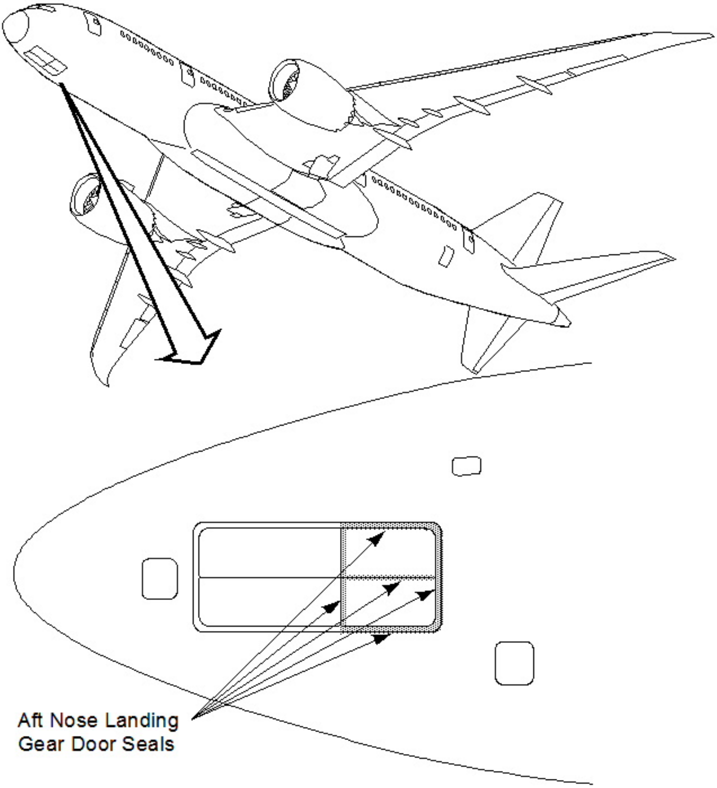
ENROUTE CLIMB

23 kg

APPROACH

23 kg

LOCATION


Aft Nose Landing
Gear Door Seals

32-42-01 Main Landing Gear Axle Remote Data Concentrator

Interval	Installed	Required	Procedure
N/A	8	See below	**N/A**

One per truck may be missing provided:

a. Connector cover dispatch equipment K32036 is installed on the wire bundle plug. For the axle remote data concentrator missing, the associated antiskid control, the brake temperature monitoring, and tire pressure indication systems must be considered inoperative.

b. Reduce performance limited weights for any number missing by:

Note: 1. Dispatch the airplane using MEL Items 32-42-02, 32-46-01 and 32-49-01.

2. Associated axle RDC magnetic ring/flux link may be broken or missing.

--------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • ---------

OPERATIONS (O)

TAKE-OFF

No decrement

ENROUTE CLIMB

No decrement

APPROACH AND LANDING

No decrement

LOCATION

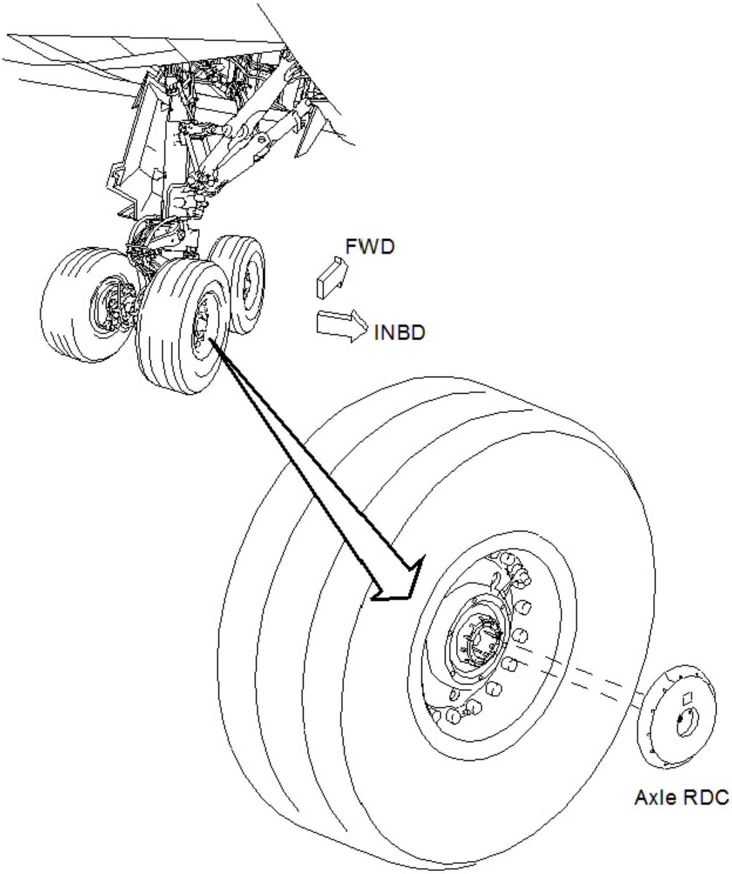


Table of Contents

ATA 33 LIGHTS ATA 33-1
Table Of Contents ATA 33-1
33-37-01 Exterior Cargo Light Lens ATA 33-2
33-41-01 Wing Illumination Light Lens ATA 33-4
33-42-01 Nose Gear Landing And Taxi Lights ATA 33-6
33-43-01 Rear Position Lights ATA 33-8
33-44-01 Anti-Collision Tail Light Lens Retainer Assembly ATA 33-10
33-45-01 Logo Lights ATA 33-12

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33-37-01 Exterior Cargo Light Lens

Interval	Installed	Required	Procedure
N/A	4	See below	**N/A**

Any number may be missing.

a. For each missing light lens, open the appropriate circuit breaker using a flight deck multi-function display and lock with an INOP tag. Cover the light assembly opening with speed tape. Inspect speed tape every other flight. The associated exterior cargo light must be considered inoperative.

Note: The airplane must be dispatched using MEL Item 33-37-02.

b. Reduce performance limited weights for any number missing by:

--------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • ---------

OPERATIONS (O)

TAKE-OFF

No decrement

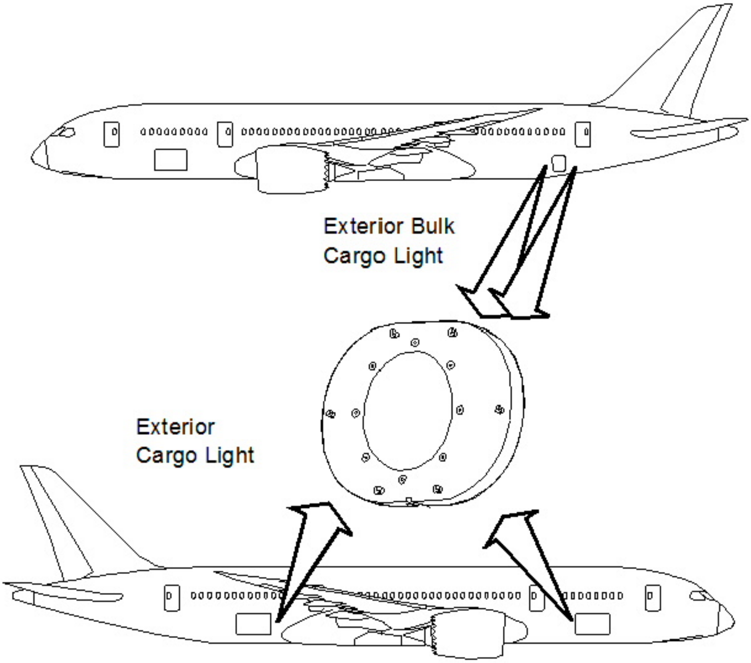
ENROUTE CLIMB

No decrement

APPROACH AND LANDING

No decrement

LOCATION


Exterior Bulk
Cargo Light
Exterior
Cargo Light

UNCONTROLLED IF DOWNLOADED OR PRINTED

33-41-01 Wing Illumination Light Lens

Interval	Installed	Required	Procedure
N/A	2	See below	**N/A**

Any number may be missing.

a. For each missing light lens, open the appropriate circuit breaker using a flight deck multi-function display and lock with an INOP tag. Cover the light assembly opening with speed tape. Inspect speed tape every other flight. The associated wing illumination light must be considered inoperative.

Note: The airplane must be dispatched using MEL Item 33-41-01.

b. Reduce performance limited weights for any number missing by:

--------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • ---------

OPERATIONS (O)

TAKE-OFF

No decrement

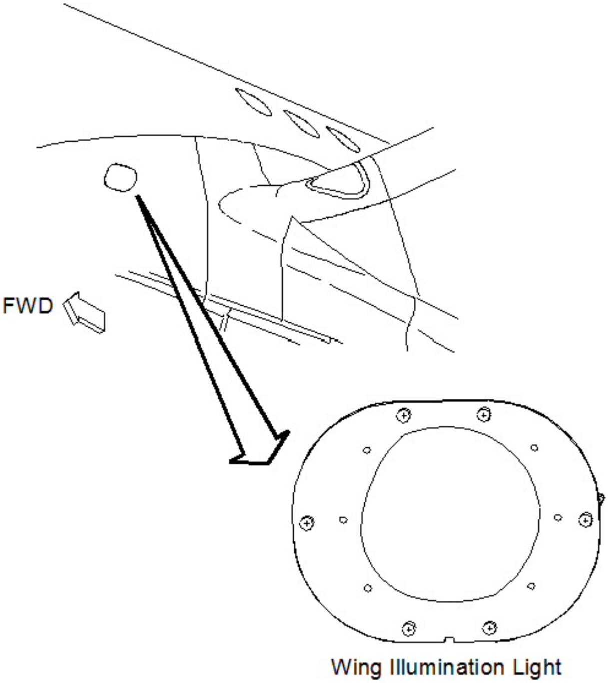
ENROUTE CLIMB

No decrement

APPROACH AND LANDING

No decrement

LOCATION


FWD
Wing Illumination Light

33-42-01 Nose Gear Landing and Taxi Lights

Interval	Installed	Required	Procedure
N/A	4	See below	**N/A**

Any number may be missing provided:

a. The wiring is disconnected, capped and stowed.

b. For each missing light lens, open the appropriate circuit breaker using a flight deck multi-function display and lock with an INOP tag.

c. The associated landing light or taxi light must be considered inoperative.

d. Reduce performance limited weights for any number missing by:

Note: The airplane must dispatched using MEL Item 33-42-01.

--------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • ---------

OPERATIONS (O)

TAKE-OFF

No decrement

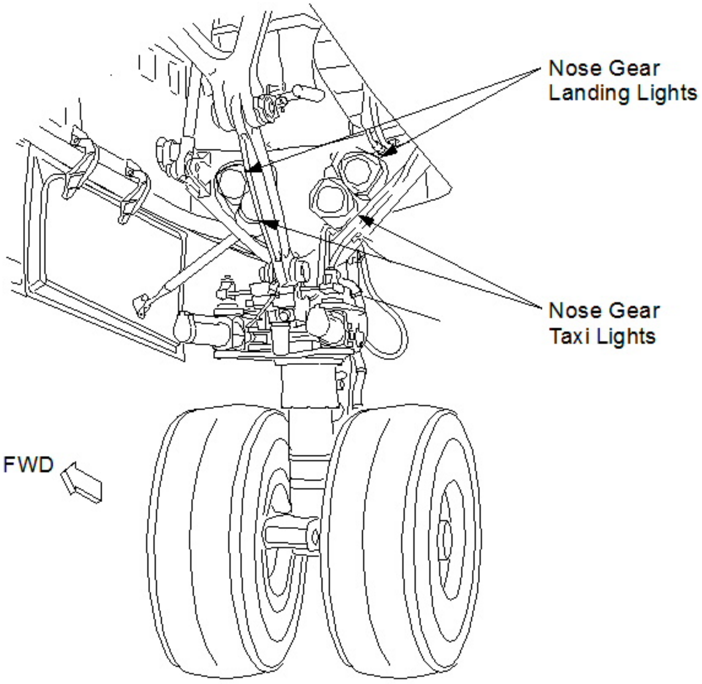
ENROUTE CLIMB

No decrement

APPROACH AND LANDING

No decrement

LOCATION


Nose Gear
Landing Lights
Nose Gear
Taxi Lights
FWD

33-43-01 Rear Position Lights

Interval	Installed	Required	Procedure
N/A	2	See below	**N/A**

Any number may be missing provided:

a. The wiring is disconnected, capped and stowed.
b. The associated position light must be considered inoperative.
c. Reduce performance limited weights for any number missing by:

Note: The airplane must be dispatched using MEL Item 33-43-01.

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OPERATIONS (O)

TAKE-OFF

Negligible

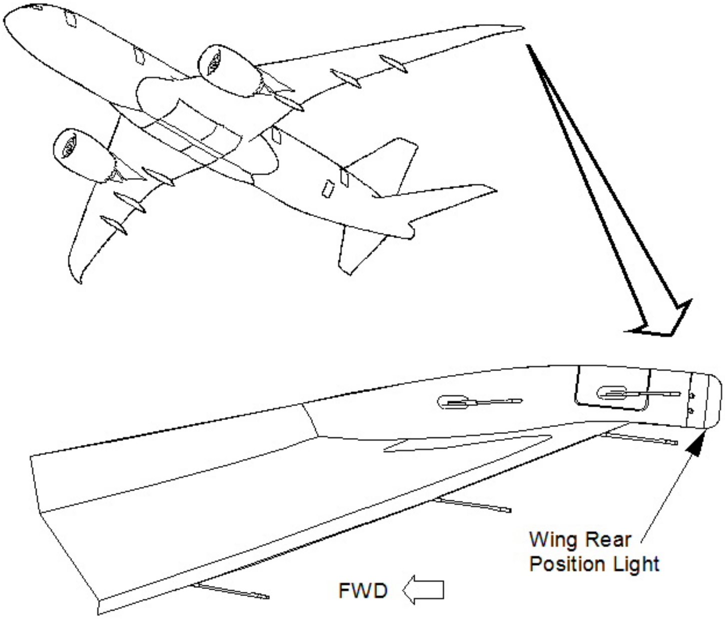
ENROUTE CLIMB

Negligible

APPROACH AND LANDING

Negligible

LOCATION


Wing Rear
Position Light
FWD

UNCONTROLLED IF DOWNLOADED OR PRINTED

33-44-01 Anti-collision Tail Light Lens Retainer Assembly

Interval	Installed	Required	Procedure
N/A	2	See below	**N/A**

Any number may be missing. The associated position light and anti-collision light system must be considered inoperative.

a. When the lens is missing, disconnect electrical power and remove position light and anti-collision light LED modules, lens and lens housing. With the rest of the light assembly intact, cover the opening with speed tape.

b. Reduce performance limited weights for any number missing by:

Note: The airplane must be dispatched using MEL Items 33-43-01 and 33-44-01.

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OPERATIONS (O)

TAKE-OFF

Negligible

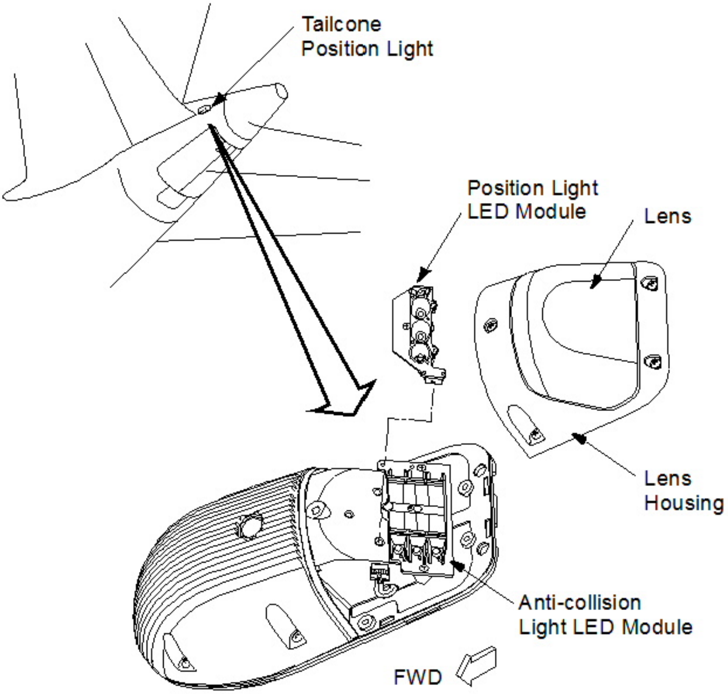
ENROUTE CLIMB

Negligible

APPROACH AND LANDING

Negligible

LOCATION


Tailcone
Position Light
Position Light
LED Module
Lens
Lens
Housing
Anti-collision
Light LED Module
FWD

33-45-01 Logo Lights

Interval	Installed	Required	Procedure
N/A	2	See below	**N/A**

Any number may be missing.

a. The associated logo light system must be considered inoperative.

b. Openings created by the missing lens must be covered with speed tape. Inspect speed tape every other flight. Open appropriate circuit breaker using a flight deck multi-function display and lock with an INOP tag.

Note: The airplane must be dispatched using MEL Items 33-45-01.

c. Reduce performance limited weights for any number missing by:

--------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • ---------

OPERATIONS (O)

TAKE-OFF

No decrement

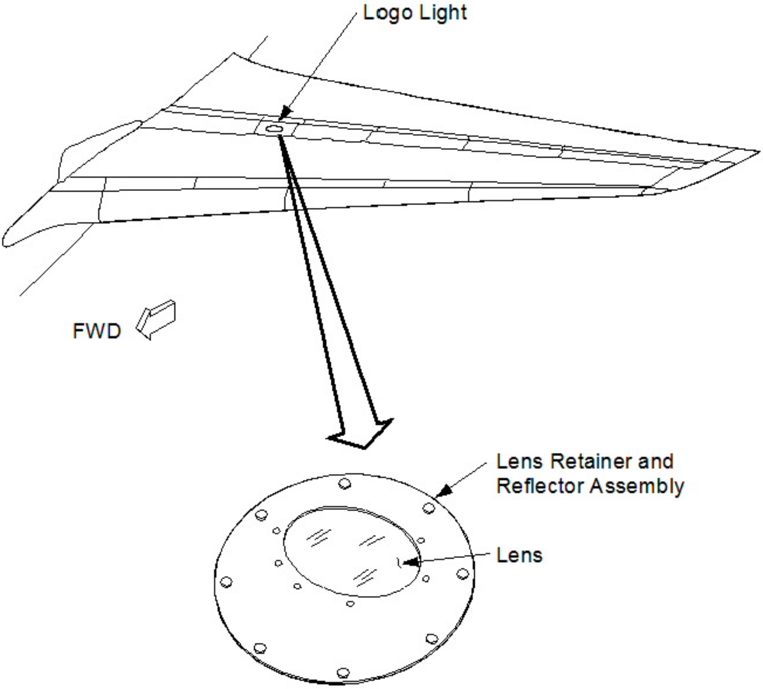
ENROUTE CLIMB

No decrement

APPROACH AND LANDING

No decrement

LOCATION


Logo Light
FWD
Lens Retainer and Reflector Assembly
Lens

UNCONTROLLED IF DOWNLOADED OR PRINTED

Table of Contents

ATA 52 **DOORS** ATA 52-1
Table Of Contents ATA 52-1
52-11-01 Passenger Entry Door Handle Flap Assembly ATA 52-2
52-34-01 Forward And Aft Cargo Door Control Switch Access Door ATA 52-4
52-34-02 Forward And Aft Cargo Handling System Control Panel Access Door ATA 52-6
52-34-02-01 787-8 ATA 52-6
52-34-02-02 787-9 ATA 52-8
52-40-01 Service Access Door ATA 52-10
52-40-01-01 787-8 ATA 52-10
52-40-01-02 787-9 ATA 52-12

52-11-01 Passenger Entry Door Handle Flap Assembly

Interval	Installed	Required	Procedure
N/A	8	See below	**N/A**

Any number may be missing.

a. Reduce performance limited weights for any number missing by:

--------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • ---------

OPERATIONS (O)

TAKE-OFF

Negligible

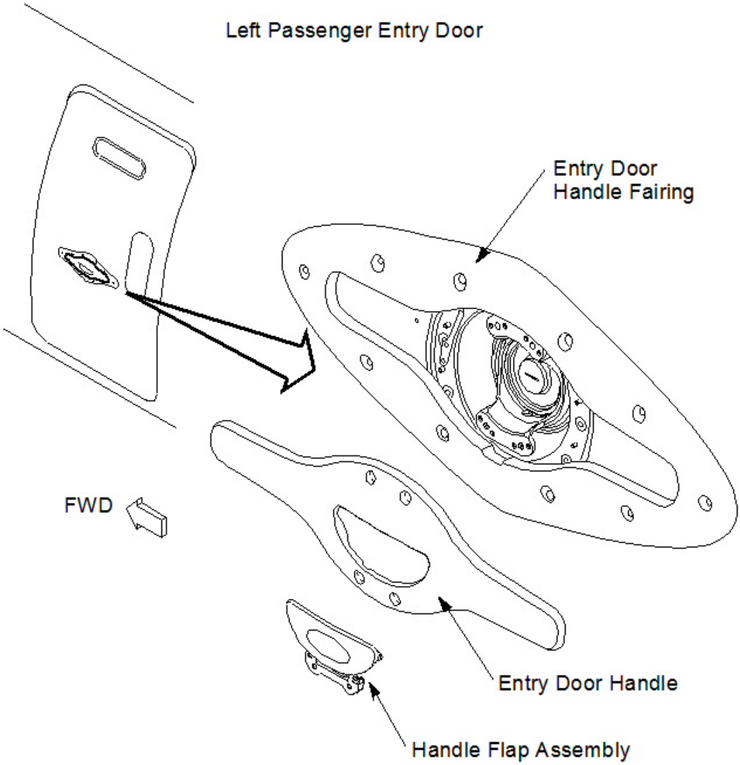
ENROUTE CLIMB

Negligible

APPROACH AND LANDING

Negligible

LOCATION


Left Passenger Entry Door
Entry Door Handle Fairing
FWD
Entry Door Handle
Handle Flap Assembly

52-34-01 Forward and Aft Cargo Door Control Switch Access Door

Interval	Installed	Required	Procedure
N/A	2	See below	**N/A**

Any number may be missing.

a. Provided electrical connectors to switch panel are disconnected, capped and stowed.
b. Reduce performance limited weights for any number missing by:

--------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • ---------

OPERATIONS (O)

TAKE-OFF

Negligible

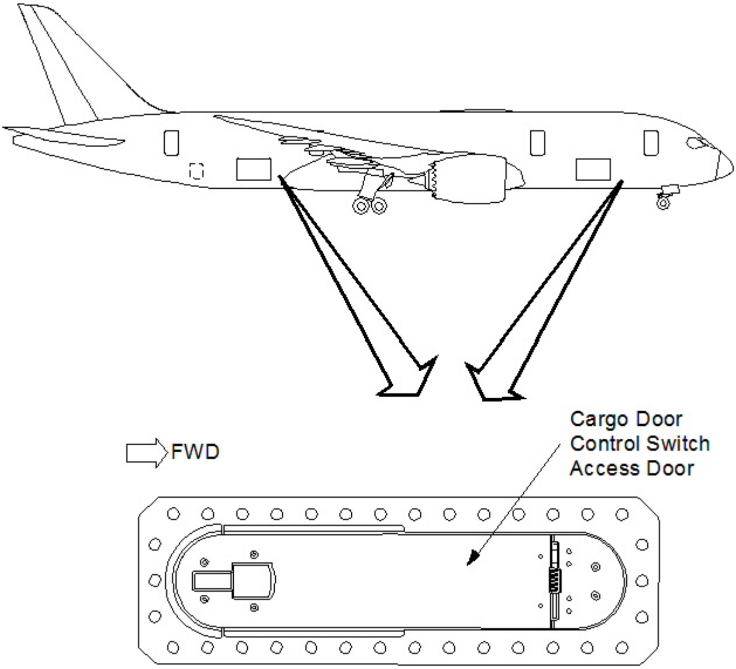
ENROUTE CLIMB

Negligible

APPROACH AND LANDING

Negligible

LOCATION


FWD
Cargo Door
Control Switch
Access Door

52-34-02 Forward and Aft Cargo Handling System Control Panel Access Door

52-34-02-01 **787-8** **TQA to TQF**

Interval	Installed	Required	Procedure
N/A	2	See below	**N/A**

Any number may be missing.

a. Provided electrical connectors to control panel are disconnected, capped and stowed.

Note: 1. If a Cargo Handling System (CHS) Control Panel Access Door is removed, the hinge screws must be re-installed to prevent a pressure leak.

2. Disconnection between electrical connectors and control panels can cause the CHS to be inoperative. Airplane must be dispatched using MEL Item 50-20-01.

b. Reduce performance limited weights for any number missing by:

--------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • ---------

OPERATIONS (O)

TAKE-OFF

Negligible

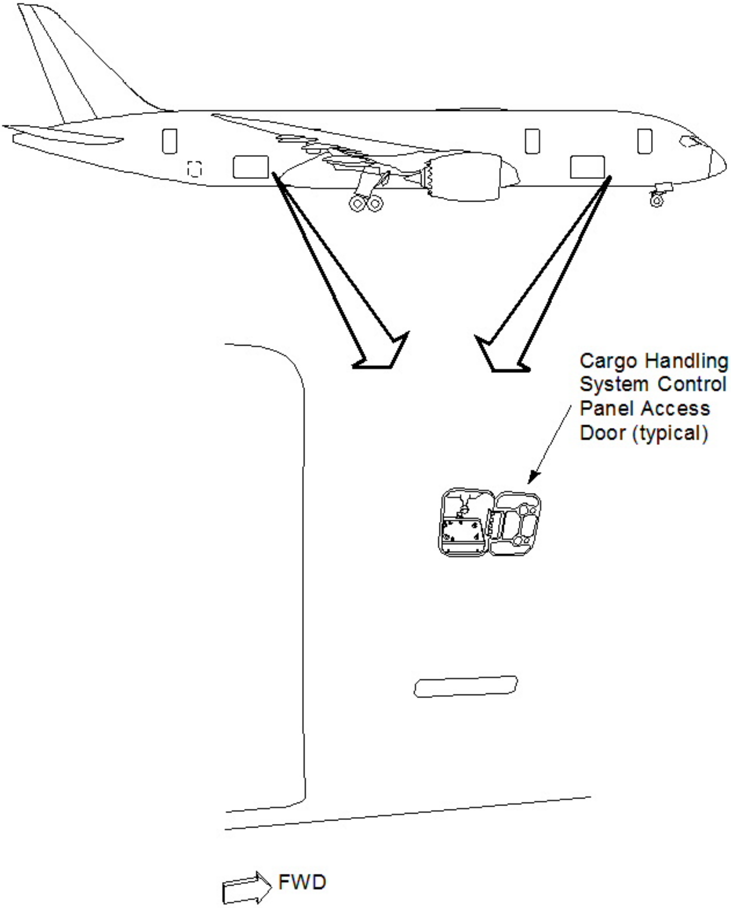
ENROUTE CLIMB

Negligible

APPROACH AND LANDING

Negligible

LOCATION


Cargo Handling
System Control
Panel Access
Door (typical)
FWD

52-34-02 **Forward and Aft Cargo Handling System Control Panel Access Door**

52-34-02-02 **787-9** **TWA to TWB**

Interval	Installed	Required	Procedure
N/A	2	See below	**N/A**

Any number may be missing.

a. Provided electrical connectors to control panel are disconnected, capped and stowed.

Note: 1. If a Cargo Handling System (CHS) Control Panel Access Door is removed, the hinge screws must be re-installed to prevent a pressure leak. Refer to AMM 50-21-61 Removal/Installation procedures for additional instructions.

2. Disconnection between electrical connectors and control panels can cause the CHS to be inoperative. Airplane must be dispatched using MEL Item 50-20-01.

b. Reduce performance limited weights for any number missing by:

--------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • ---------

OPERATIONS (O)

TAKE-OFF

68 kg

ENROUTE CLIMB

Negligible

APPROACH AND LANDING

Negligible

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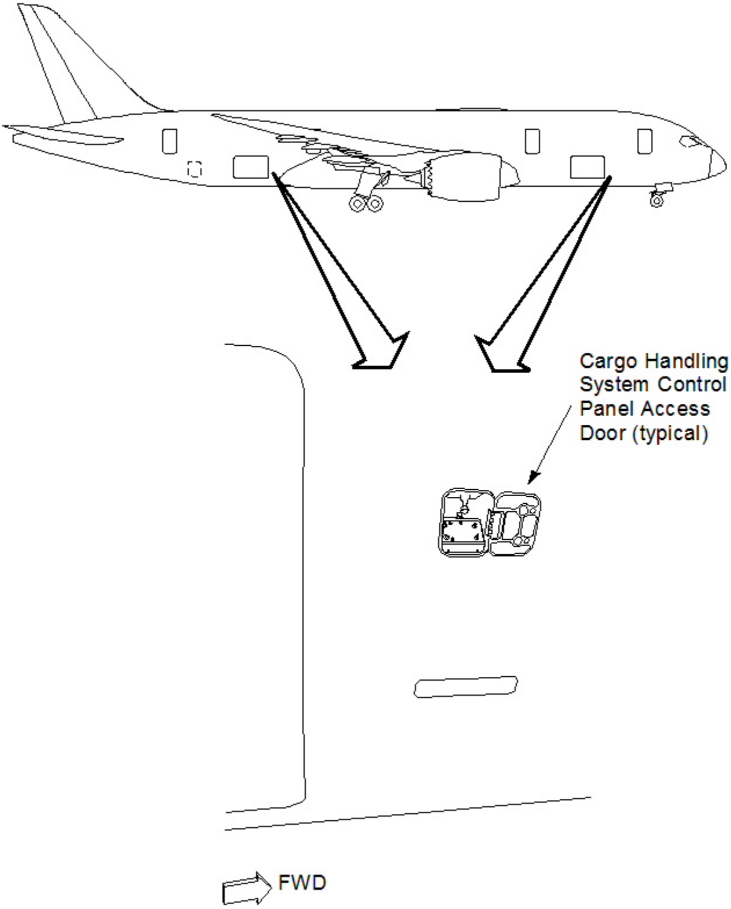
LOCATION


Cargo Handling
System Control
Panel Access
Door (typical)
FWD

UNCONTROLLED IF DOWNLOADED OR PRINTED

52-40-01 Service Access Door

52-40-01-01 **787-8** **TQA to TQF**

Interval	Installed	Required	Procedure
N/A	1	See below	**(O) (MV)**

May be missing.

a. Reduce performance limited weights by:

--------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • ---------

OPERATIONS (O)

TAKE-OFF

91 kg

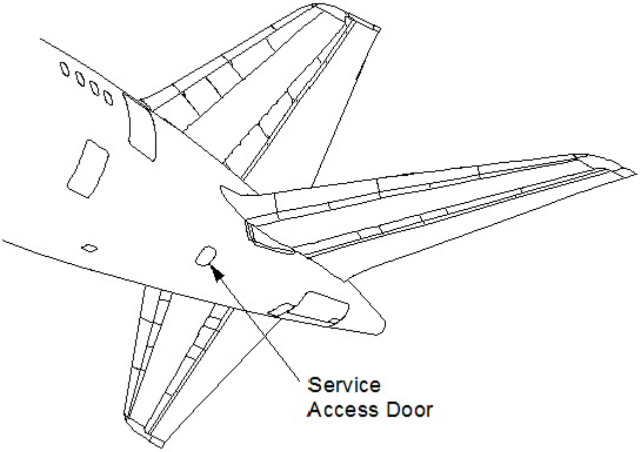
ENROUTE CLIMB

91 kg

APPROACH AND LANDING

Negligible

LOCATION


Service
Access Door

52-40-01 **Service Access Door**

52-40-01-02 **787-9** **TWA to TWB**

Interval	Installed	Required	Procedure
N/A	1	See below	**(O) (MV)**

May be missing.

a. Reduce performance limited weights by:

--------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • ---------

OPERATIONS (O)

TAKE-OFF

113 kg

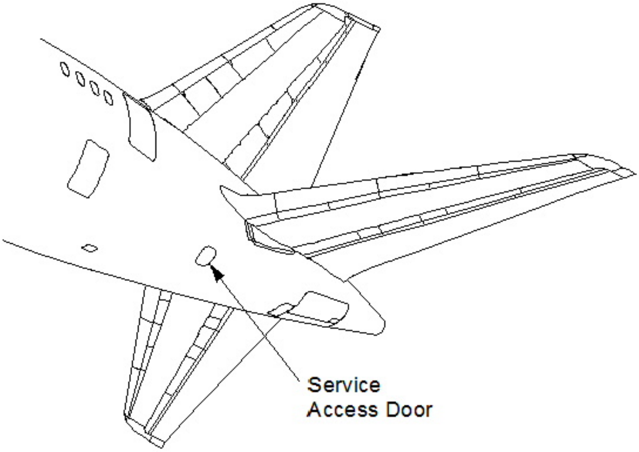
ENROUTE CLIMB

91 kg

APPROACH AND LANDING

Negligible

LOCATION


Service
Access Door

UNCONTROLLED IF DOWNLOADED OR PRINTED

Table of Contents

ATA 53 **AFT WHEEL WELL BULKHEAD HEAT SHIELD** . . . . **ATA 53-1**

Table Of Contents . . . . **ATA 53-1**

53-38-01 **Aft Wheel Well Bulkhead Heat Shield** . . . . **ATA 53-2**

53-38-01-01 **787-9** . . . . **ATA 53-2**

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53-38-01 Aft Wheel Well Bulkhead Heat Shield

53-38-01-01 **787-9** **TWA to TWB**

Interval	Installed	Required	Procedure
N/A	12	See below	**N/A**

Any number may be missing.

a. Performance limited weights are reduced by the following:

--------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • ---------

OPERATIONS (O)

TAKE-OFF

No decrement

ENROUTE CLIMB

No decrement

APPROACH AND LANDING

No decrement

LOCATION

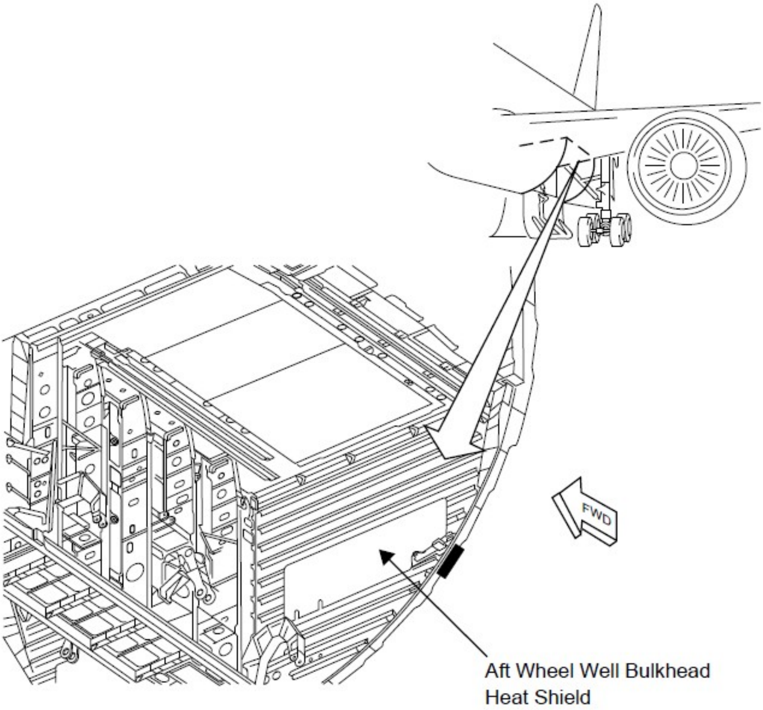

FWD
Aft Wheel Well Bulkhead Heat Shield

Table of Contents

ATA 55 **STABILIZER** ATA 55-1
Table Of Contents ATA 55-1
55-20-01 Elevator Outboard End Seal ATA 55-2
  55-20-01-01 787-8 ATA 55-2
  55-20-01-02 787-9 ATA 55-4
55-20-02 Elevator Inboard End Seal (787-9) ATA 55-6
55-20-04 Horizontal Stabilizer Trailing Edge Inboard End Seals (787-9) ATA 55-8
55-20-05 Horizontal Stabilizer Leading Edge Aero Strips (787-9) ATA 55-10
55-30-01 Vertical Tail Vortex Generators ATA 55-12
55-30-02 Vertical Stabilizer Leading Edge Aero Strips (787-9) ATA 55-14
55-40-01 Vertical Stabilizer Tip Fairing Rudder Seal ATA 55-16
  55-40-01-01 787-8 ATA 55-16
  55-40-01-02 787-9 ATA 55-18
55-40-02 Rudder To Fuselage Seal ATA 55-20
  55-40-02-01 787-8 ATA 55-20
  55-40-02-02 787-9 ATA 55-22

55-20-01 Elevator Outboard End Seal

55-20-01-01 787-8

TQA to TQF

Interval	Installed	Required	Procedure
N/A	4	See below	**(O) (MV)**

Any number may be missing.
Four seals, consisting of two lower and two upper seals, are installed.

a. Each missing lower seal should be counted as one negligible item.
b. Reduce performance limited weights for each foot of missing upper seal by:

OPERATIONS (O)

TAKE-OFF

91 kg

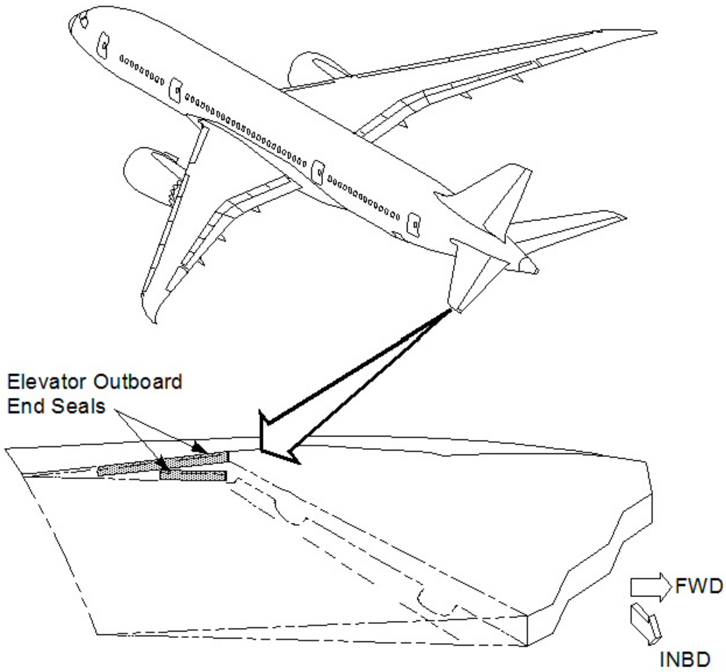
ENROUTE CLIMB

91 kg

APPROACH AND LANDING

45 kg

LOCATION


Elevator Outboard
End Seals
FWD
INBD

55-20-01 **Elevator Outboard End Seal**

55-20-01-02 **787-9**

TWA to TWB

Interval	Installed	Required	Procedure
N/A	4	See below	**(O) (MV)**

Any number may be missing.
Four seals, consisting of two lower and two upper seals, are installed.

a. Each missing lower seal should be counted as one negligible item.
b. Reduce performance limited weights for each foot of missing upper seal by:

--------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • ---------

OPERATIONS (O)

TAKE-OFF

113 kg

ENROUTE CLIMB

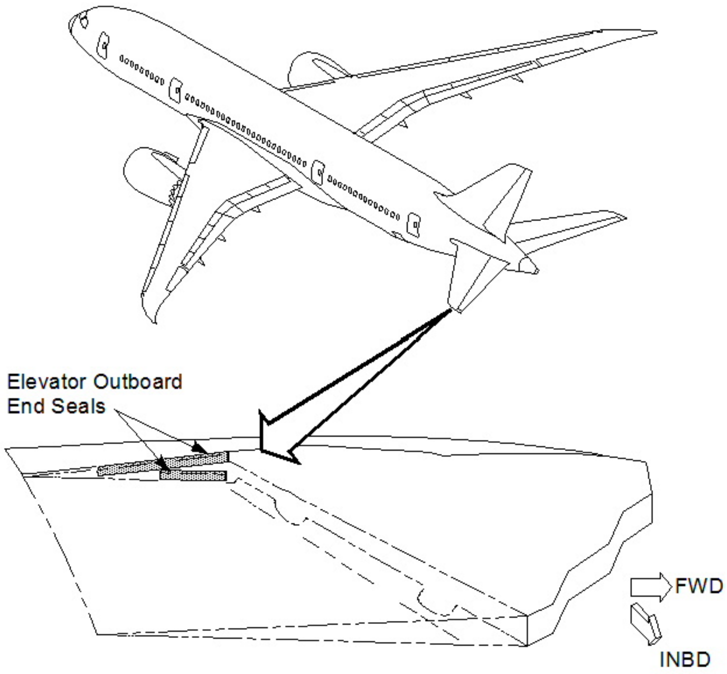
136 kg

APPROACH AND LANDING

45 kg

UNCONTROLLED IF DOWNLOADED OR PRINTED

LOCATION


Elevator Outboard
End Seals
FWD
INBD

55-20-02 Elevator Inboard End Seal (787-9)

TWA to TWB

Interval	Installed	Required	Procedure
N/A	2	See below	**(O) (MV)**

Any number may be missing.

a. Reduce performance limited weights for each foot of missing seal by:

--------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • ---------

OPERATIONS (O)

TAKE-OFF

136 kg

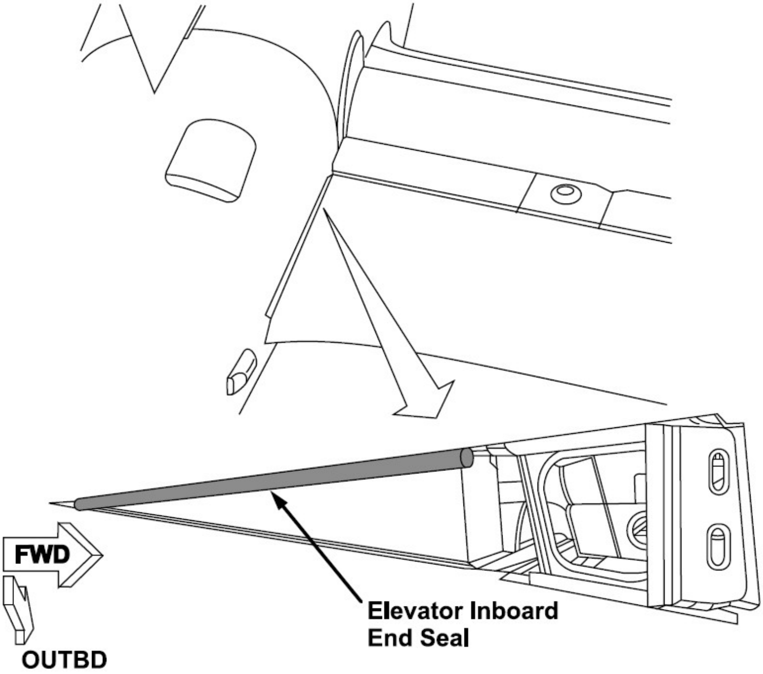
ENROUTE CLIMB

113 kg

APPROACH AND LANDING

45 kg

LOCATION


FWD
OUTBD
Elevator Inboard End Seal

55-20-04 Horizontal Stabilizer Trailing Edge Inboard End Seals (787-9) TWA to TWB

Interval	Installed	Required	Procedure
N/A	4	See below	**(O) (MV)**

Any number may be missing.

a. Reduce performance limited weights for each horizontal stabilizer side (right or left) with one or more missing seals by:

--------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • ---------

OPERATIONS (O)

TAKE-OFF

227 kg/side

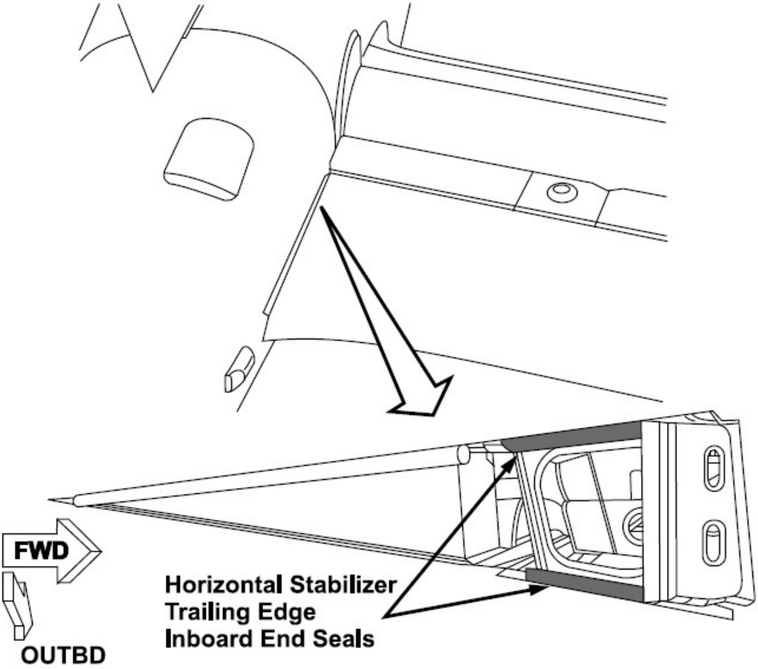
ENROUTE CLIMB

181 kg/side

APPROACH AND LANDING

68 kg/side

LOCATION


FWD
OUTBD
Horizontal Stabilizer
Trailing Edge
Inboard End Seals

55-20-05 Horizontal Stabilizer Leading Edge Aero Strips (787-9) TWA to TWB

Interval	Installed	Required	Procedure
N/A	4	See below	(O) (MV)

Any number may be missing.

a. Reduce performance limited weights for each missing strip by:

--------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • ---------

OPERATIONS (O)

TAKE-OFF

113 kg

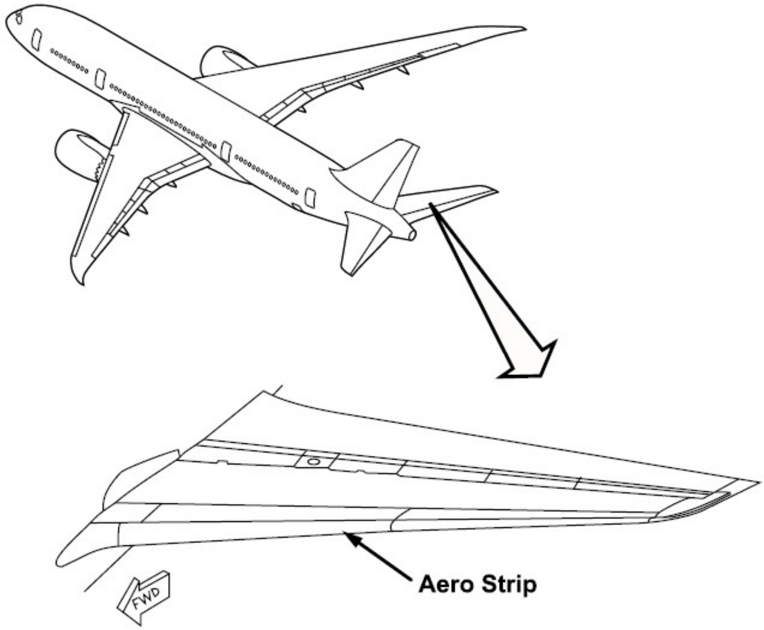
ENROUTE CLIMB

91 kg

APPROACH AND LANDING

Negligible

LOCATION



UNCONTROLLED IF DOWNLOADED OR PRINTED

55-30-01 Vertical Tail Vortex Generators

Interval	Installed	Required	Procedure
N/A	26	See below	**N/A**

One per side may be missing.

a. Reduce performance limited weights for any number missing by:

--------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • ---------

OPERATIONS (O)

TAKE-OFF

No decrement

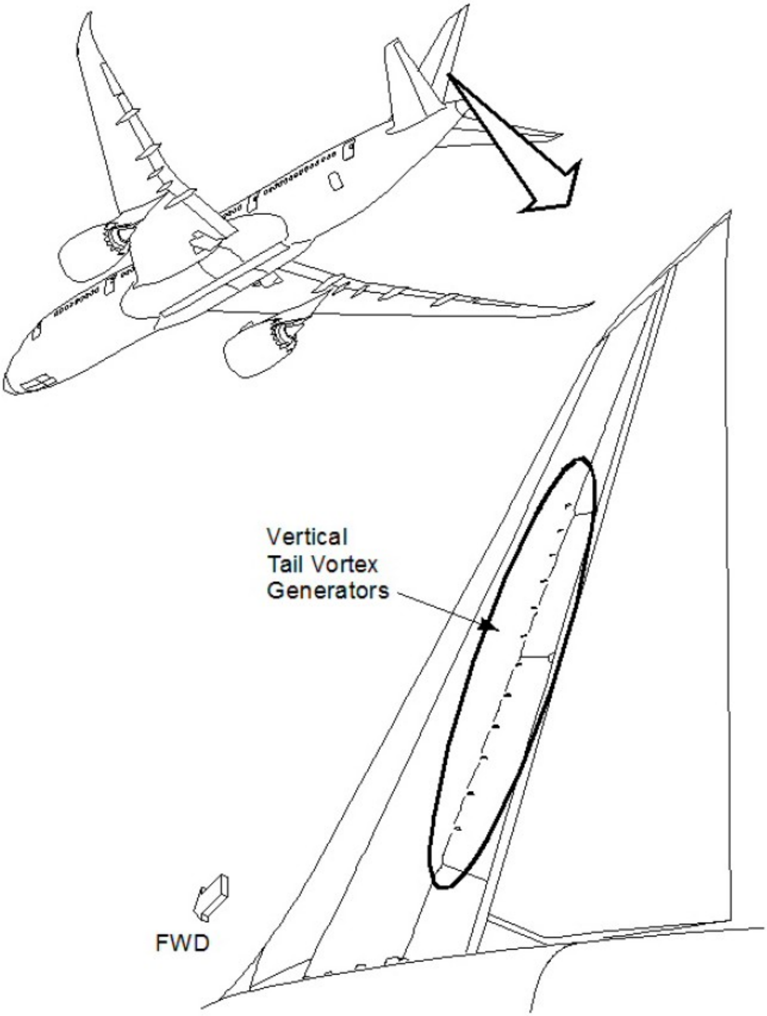
ENROUTE CLIMB

No decrement

APPROACH AND LANDING

No decrement

LOCATION


Vertical
Tail Vortex
Generators
FWD

55-30-02 Vertical Stabilizer Leading Edge Aero Strips (787-9) **TWA to TWB**

Interval	Installed	Required	Procedure
N/A	5	See below	**(O) (MV)**

Any number may be missing.

a. Reduce performance limited weights for each missing strip by:

--------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • ---------

OPERATIONS (O)

TAKE-OFF

91 kg

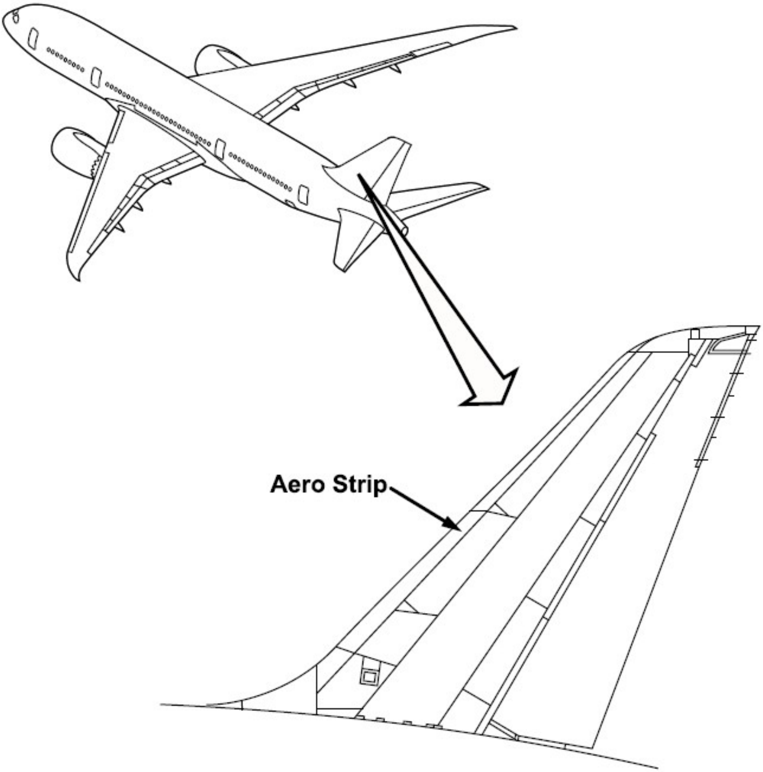
ENROUTE CLIMB

68 kg

APPROACH AND LANDING

Negligible

LOCATION



55-40-01 Vertical Stabilizer Tip Fairing Rudder Seal

55-40-01-01 **787-8** **TQA to TQF**

Interval	Installed	Required	Procedure
N/A	3	See below	**(O) (MV)**

Any number may be missing.
a. Reduce performance limited weights for any number missing by:

--------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • ---------

OPERATIONS (O)

TAKE-OFF

159 kg

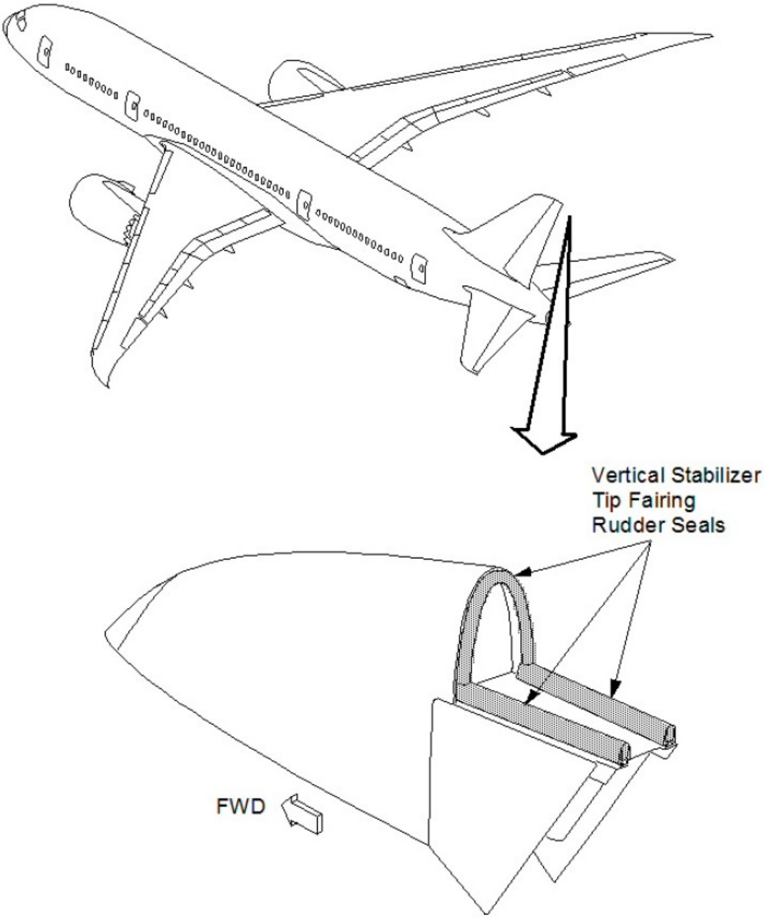
ENROUTE CLIMB

159 kg

APPROACH AND LANDING

68 kg

LOCATION


Vertical Stabilizer
Tip Fairing
Rudder Seals
FWD

55-40-01 **Vertical Stabilizer Tip Fairing Rudder Seal**

55-40-01-02 **787-9** **TWA to TWB**

Interval	Installed	Required	Procedure
N/A	3	See below	**(O) (MV)**

Any number may be missing.
a. Reduce performance limited weights for any number missing by:

- - - - - - - - - - - - - - - - - - - -

OPERATIONS (O)

TAKE-OFF

204 kg

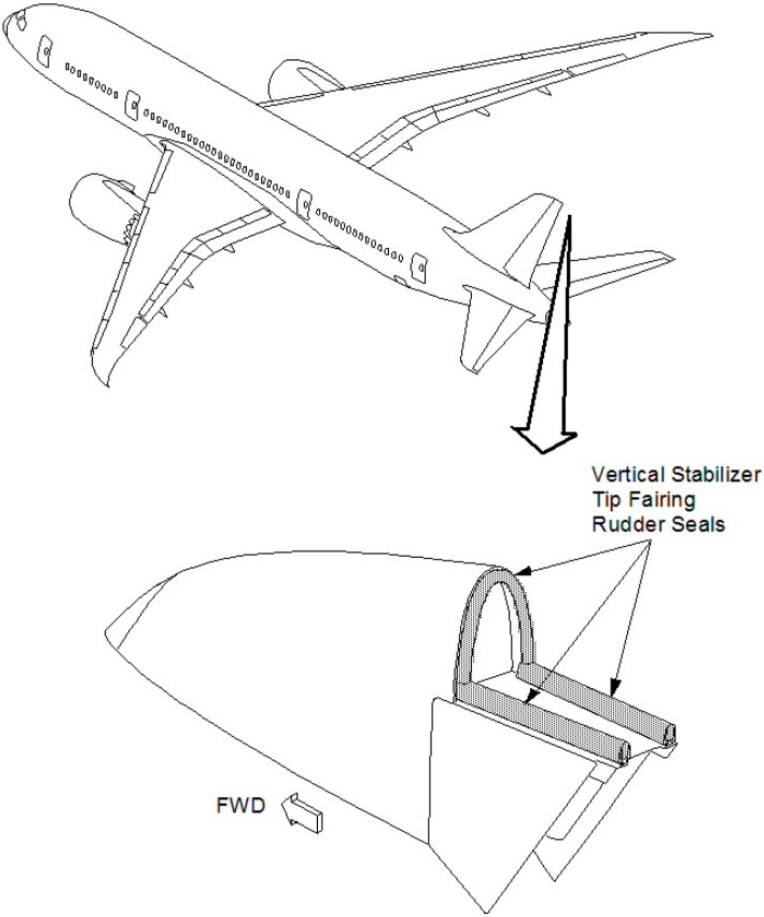
ENROUTE CLIMB

159 kg

APPROACH AND LANDING

68 kg

LOCATION


Vertical Stabilizer
Tip Fairing
Rudder Seals
FWD

55-40-02 Rudder to Fuselage Seal

55-40-02-01 **787-8** **TQA to TQF**

Interval	Installed	Required	Procedure
N/A	6	See below	**(O) (MV**

Any number may be missing.
a. Reduce performance limited weights for any number missing by

--------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • ---------

OPERATIONS (O)

TAKE-OFF

272 kg

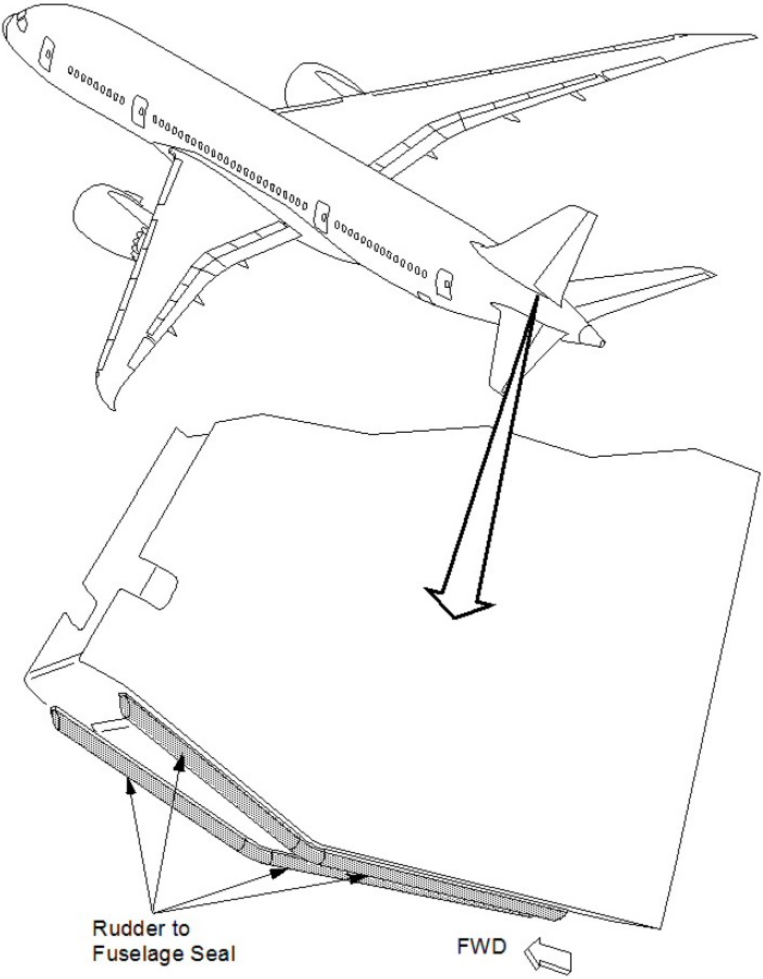
ENROUTE CLIMB

295 kg

APPROACH AND LANDING

113 kg

LOCATION


Rudder to
Fuselage Seal
FWD

55-40-02 **Rudder to Fuselage Seal**

55-40-02-02 **787-9** **TWA to TWB**

Interval	Installed	Required	Procedure
N/A	6	See below	**(O) (MV)**

Any number may be missing.
a. Reduce performance limited weights for any number missing by:

OPERATIONS (O)

TAKE-OFF

408 kg

ENROUTE CLIMB

340 kg

APPROACH AND LANDING

91 kg

LOCATION

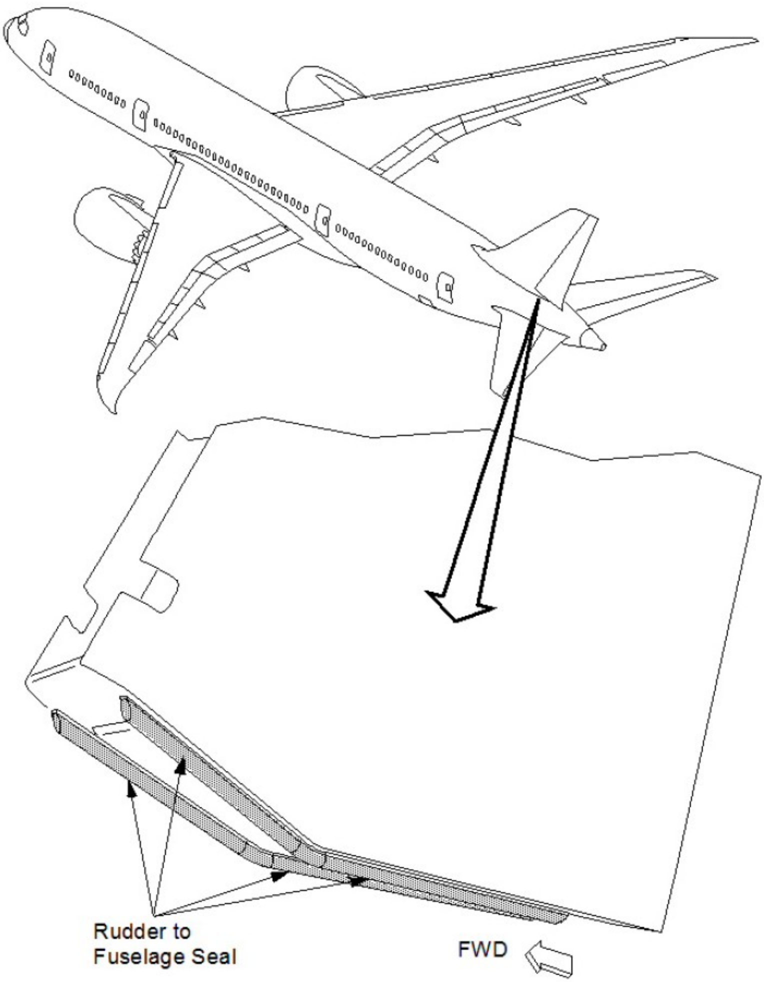

Rudder to
Fuselage Seal
FWD

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Table of Contents

ATA 56 **WINDOWS** . . . . . . ATA 56-1
Table Of Contents . . . . . . ATA 56-1
56-11-01 Windshield Aerodynamic Sealant . . . . . . ATA 56-2
56-21-01 Passenger Window Seals . . . . . . ATA 56-4
56-21-01-01 787-8 . . . . . . ATA 56-4
56-21-01-02 787-9 . . . . . . ATA 56-7
56-31-01 Entry Door Window Seals . . . . . . ATA 56-10
56-31-01-01 787-8 . . . . . . ATA 56-10
56-31-01-02 787-9 . . . . . . ATA 56-12

UNCONTROLLED IF DOWNLOADED OR PRINTED

56-11-01 Windshield Aerodynamic Sealant

Interval	Installed	Required	Procedure
N/A	4	See below	**N/A**

Any number may be missing.
a. Reduce performance limited weights for any number missing by:

--------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • ---------

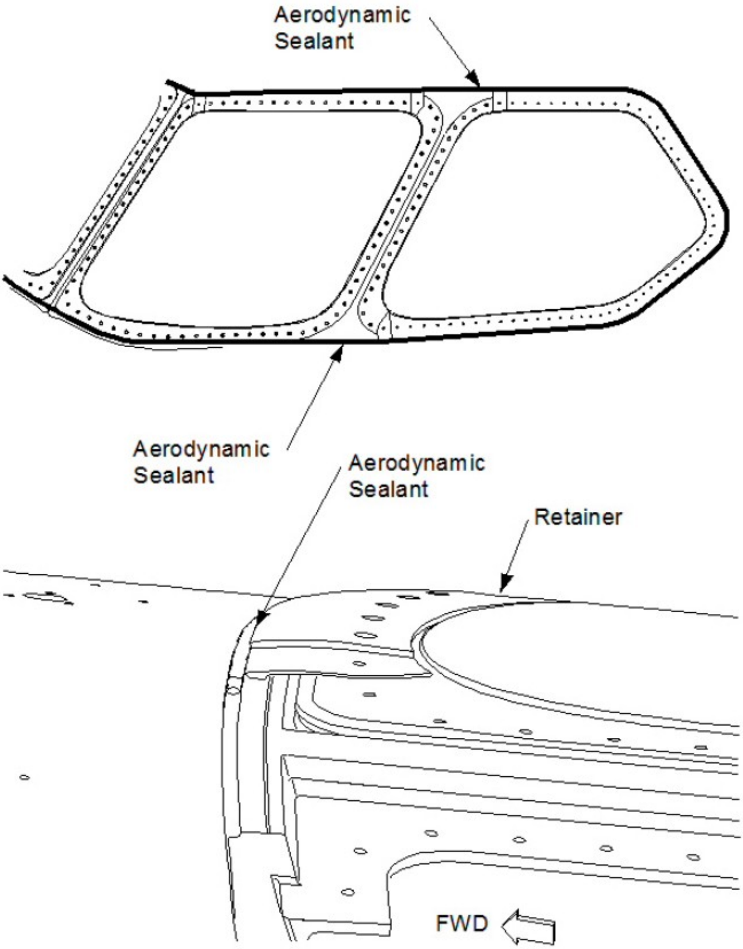
OPERATIONS (O)

TAKE-OFF
Negligible

ENROUTE CLIMB
Negligible

APPROACH AND LANDING
Negligible

LOCATION


Aerodynamic Sealant
Aerodynamic Sealant
Aerodynamic Sealant
Retainer
FWD

56-21-01 Passenger Window Seals

56-21-01-01 787-8

TQA to TQF

Interval	Installed	Required	Procedure
N/A	92	See below	**(O) (MV)**

Any or all window seals may be migrated:

a. The seals may migrate to protrude in the airflow, but are not permitted to be missing from the window frame assembly.

b. A migrated window seal will generally be visible in a walk-around inspection without the need to measure actual seal displacement.

c. Consult AMM 56-21-01 to determine if noted seal mismatch indicates seal migration.

d. Utilize the equations provided in Table 1 and Table 2 below to calculate the appropriate penalty for 15 or more migrated window seals. For under 15 migrated window seals, the table penalty must be applied.

e. Table 1: Takeoff / Enroute Penalty

Takeoff / Enroute Penalty			
Negligible Limit	**Up to 15**	**15+ Windows**	**15+ Windows**
		Slope [a)] **(See Note)**	**Intercept** [a)] **(See Note)**
Up to 3	226 kg	32.7	48.0
Equation: Takeoff/Enroute Penalty (lb) = Number of Migrated Seals * Slope + Intercept			

a) The values provided in the table for Slope and Intercept are expressed in lb/seal and lb, respectively. To obtain the corresponding penalty in kg, the appropiate conversion factor must be applied.

f. Table 2: Takeoff / Enroute Penalty

Approach and Landing Penalty			
Negligible Limit	**Up to 15**	**15+ Windows**	**15+ Windows**
		Slope [a)] **(See Note)**	**Intercept** [a)] **(See Note)**
Up to 3	90 kg	13.1	18.0
Equation: Approach and Landing Penalty (lb) = Number of Migrated Seals * Slope + Intercept			

a) The values provided in the table for Slope and Intercept are expressed in lb/seal and lb, respectively. To obtain the corresponding penalty in kg, the appropiate conversion factor must be applied.

g. Alternatively, apply penalties for the appropriate window count with outward window seal migration from Table 3 below.

Table 3: Passenger Window Seal Migration Penalty

Number of Windows Affected	Takeoff and Enroute Climb	Approach and Landing
1 to 3	Negligible	Negligible
Up to 15	226 kg	91 kg
Up to 30	453 kg	181 kg
Up to 45	680 kg	272 kg
Up to 60	907 kg	362 kg
Up to 75	1,133 kg	453 kg
75+	1,360 kg	544 kg

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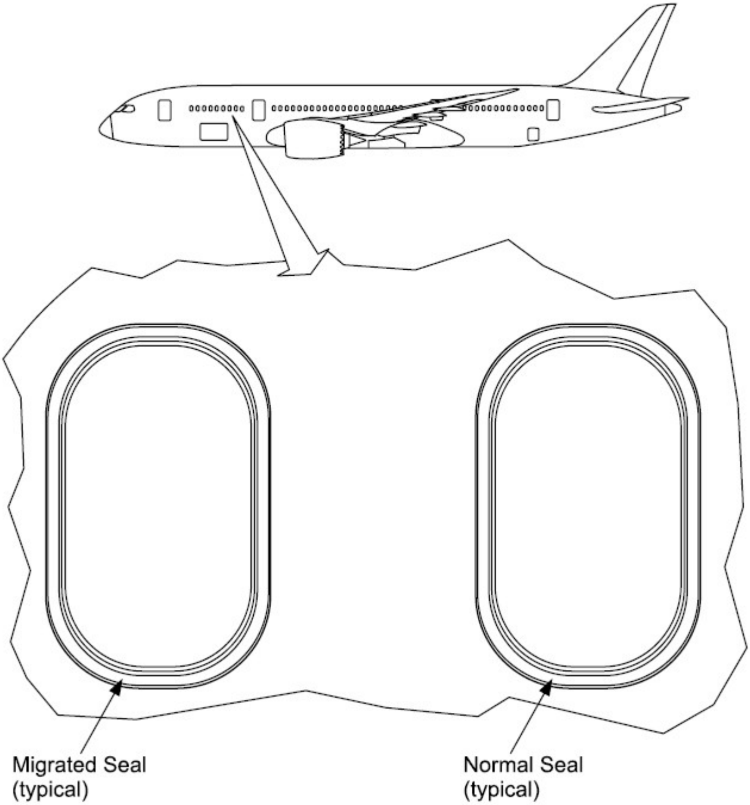
LOCATION


Migrated Seal
(typical)
Normal Seal
(typical)

56-21-01 **Passenger Window Seals**

56-21-01-02 **787-9** **TWA to TWB**

Interval	Installed	Required	Procedure
N/A	110	See below	**(O) (MV)**

Any or all window seals may be migrated:

a. The seals may migrate to protrude in the airflow, but are not permitted to be missing from the window frame assembly.

b. A migrated window seal will generally be visible in a walk-around inspection without the need to measure actual seal displacement.

c. Consult AMM 56-21-01 to determine if noted seal mismatch indicates seal migration.

d. Utilize the equations provided in Table 1 and Table 2 below to calculate the appropriate penalty for 15 or more migrated window seals. For under 15 migrated window seals, the table penalty must be applied.

e. Table 1: Takeoff / Enroute Penalty

Takeoff / Enroute Penalty			
Negligible Limit	**Up to 15**	**15+ Windows**	**15+ Windows**
		Slope a) **(See Note)**	**Intercept** a) **(See Note)**
Up to 2	294 kg	45.0	26.0
Equation: Takeoff/Enroute Penalty (lb) = Number of Migrated Seals * Slope + Intercept			

a) The values provided in the table for Slope and Intercept are expressed in lb/seal and lb, respectively. To obtain the corresponding penalty in kg, the appropiate conversion factor must be applied.

f. Table 2: Takeoff / Enroute Penalty

Approach and Landing Penalty			
Negligible Limit	**Up to 15**	**15+ Windows**	**15+ Windows**
		Slope a) **(See Note)**	**Intercept** a) **(See Note)**
Up to 2	90 kg	12.4	43.0
Equation: Approach and Landing Penalty (lb) = Number of Migrated Seals * Slope + Intercept			

a) The values provided in the table for Slope and Intercept are expressed in lb/seal and lb, respectively. To obtain the corresponding penalty in kg, the appropiate conversion factor must be applied.

g. Alternatively, apply penalties for the appropriate window count with outward window seal migration from Table 3 below.

Table 3: Passenger Window Seal Migration Penalty

Number of Windows Affected	Takeoff and Enroute Climb	Approach and Landing
1 to 2	Negligible	Negligible
Up to 15	318 kg	91 kg
Up to 30	612 kg	181 kg
Up to 45	930 kg	272 kg
Up to 60	1,225 kg	340 kg
Up to 75	1,542 kg	431 kg
Up to 90	1,837 kg	522 kg
Up to 105	2,155 kg	590 kg
105+	2,245 kg	635 kg

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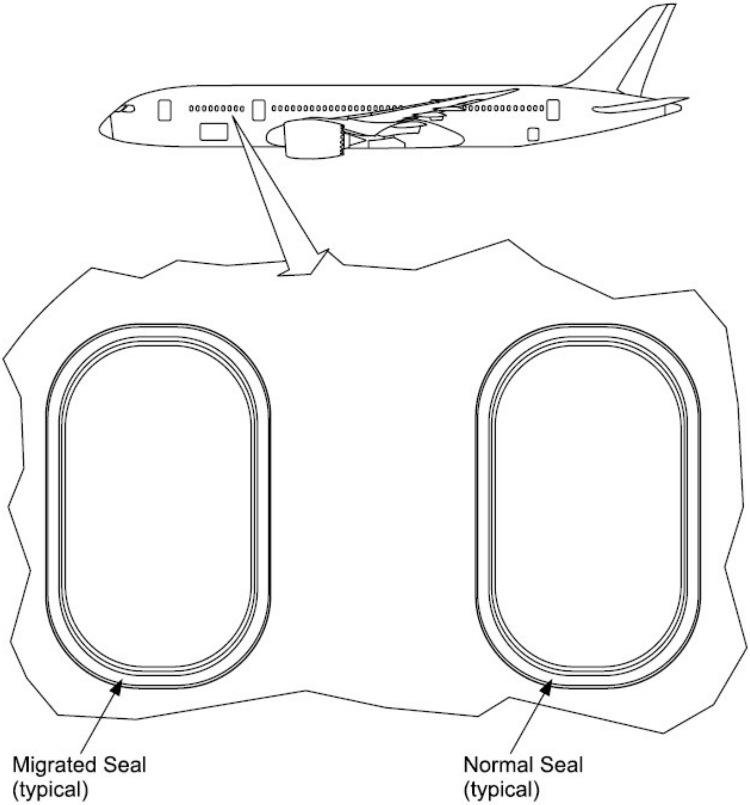
LOCATION


Migrated Seal
(typical)
Normal Seal
(typical)

56-31-01 Entry Door Window Seals

56-31-01-01 **787-8** **TQA to TQF**

Interval	Installed	Required	Procedure
N/A	8	See below	**N/A**

Any number may be migrated.

a. The seals may migrate to protrude into the airflow, but are not permitted to be missing from the window frame assembly.

b. Consult AMM 56-21-01 to determine if noted seal mismatch indicates seal migration.

c. Migrated window seal will generally be visible in a walk-around inspection without the need to measure actual seal displacement.

--------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • ---------

OPERATIONS (O)

TAKE-OFF

Negligible

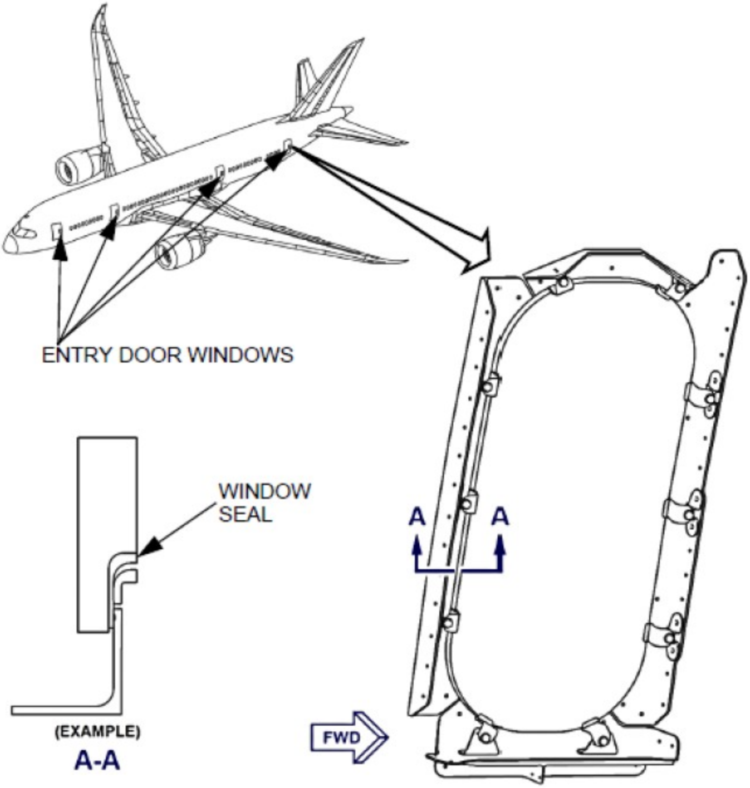
ENROUTE CLIMB

Negligible

APPROACH AND LANDING

Negligible

LOCATION


ENTRY DOOR WINDOWS
WINDOW
SEAL
(EXAMPLE)
A-A
A
A
FWD

56-31-01 Entry Door Window Seals

56-31-01-02 **787-9** **TWA to TWB**

Interval	Installed	Required	Procedure
N/A	8	See below	**N/A**

Any number may be migrated.

a. The seals may migrate to protrude into the airflow, but are not permitted to be missing from the window frame assembly.

b. Consult AMM 56-21-01 to determine if noted seal mismatch indicates seal migration.

c. Migrated window seal will generally be visible in a walk-around inspection without the need to measure actual seal displacement

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OPERATIONS (O)

TAKE-OFF

Negligible

ENROUTE CLIMB

Negligible

APPROACH AND LANDING

Negligible

LOCATION

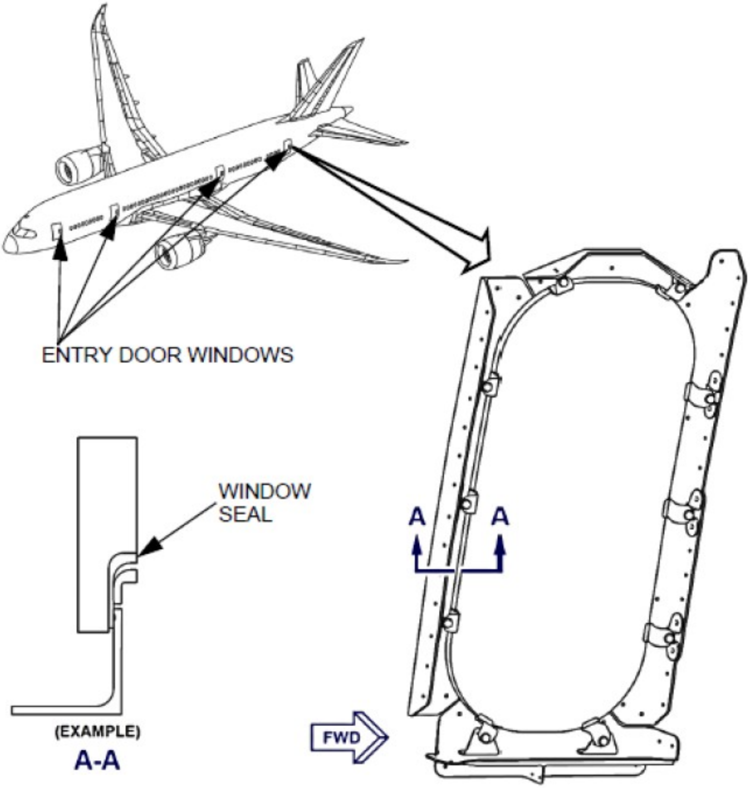
ENTRY DOOR WINDOWS
WINDOW SEAL
(EXAMPLE)
A-A
A
A
FWD

Table of Contents

ATA 57 **WINGS** .... ATA 57-1
Table Of Contents .... ATA 57-1
57-25-01 Wing Vortex Generator .... ATA 57-4
57-25-02 Wing-Body Fairing Flap Door .... ATA 57-6
  57-25-02-01 787-8 .... ATA 57-6
  57-25-02-02 787-9 .... ATA 57-8
57-25-03 Wing-Body Fairing Flap Door Seal .... ATA 57-10
  57-25-03-01 787-8 .... ATA 57-10
  57-25-03-02 787-9 .... ATA 57-12
57-26-01 Wing To Body Strakelet Seal .... ATA 57-14
57-31-01 Removable Wing Tip .... ATA 57-16
  57-31-01-01 787-8 .... ATA 57-16
  57-31-01-02 787-9 .... ATA 57-18
57-43-01 Slat Spanwise Flow Seal .... ATA 57-20
  57-43-01-01 787-8 .... ATA 57-20
  57-43-01-02 787-9 .... ATA 57-22
57-43-02 Slat Spanwise Bulb Seal .... ATA 57-24
  57-43-02-01 787-8 .... ATA 57-24
  57-43-02-02 787-9 .... ATA 57-26
57-43-03 Slat Track Fairing Panel (Flex Doors) .... ATA 57-28
  57-43-03-01 787-8 .... ATA 57-28
  57-43-03-02 787-9 .... ATA 57-30
57-43-04 Slat Spanwise Lower Flexible Seal (Flex Skirts) .... ATA 57-32
  57-43-04-01 787-8 .... ATA 57-32
  57-43-04-02 787-9 .... ATA 57-34
57-43-05 Slat End Seals (Inboard Bulb Seals For Slats 6 And 7; Outboard Bulb Seals For Slats 1 And 12) .... ATA 57-36
  57-43-05-01 787-8 .... ATA 57-36
  57-43-05-02 787-9 .... ATA 57-39

57-51-21 Wing Midspan Fixed Trailing Edge Flex Panel Hinge Seals . . . . ATA 57-42
57-51-21-01 787-8 . . . . ATA 57-42
57-51-21-02 787-9 . . . . ATA 57-44
57-51-22 Wing Midspan Fixed Trailing Edge Flex Panel End Seals . . . . ATA 57-46
57-51-22-01 787-8 . . . . ATA 57-46
57-51-22-02 787-9 . . . . ATA 57-48
57-51-23 Wing Midspan Fixed Trailing Edge Lower Flap Seals . . . . ATA 57-50
57-51-23-01 787-8 . . . . ATA 57-50
57-51-23-02 787-9 . . . . ATA 57-52
57-51-24 Wing Midspan Fixed Trailing Edge Lower Removable Panels . . . . ATA 57-54
57-51-24-01 787-8 . . . . ATA 57-54
57-51-24-02 787-9 . . . . ATA 57-56
57-51-31 Wing Outboard Fixed Trailing Edge Aileron Inboard End Seals . . . . ATA 57-58
57-51-31-01 787-8 . . . . ATA 57-58
57-51-31-02 787-9 . . . . ATA 57-60
57-51-32 Wing Outboard Fixed Trailing Edge Aileron Outboard End Seals . . . . ATA 57-62
57-51-32-01 787-8 . . . . ATA 57-62
57-51-32-02 787-9 . . . . ATA 57-64
57-51-33 Wing Outboard Fixed Trailing Edge Lower Aileron Spanwise Seals . . . . ATA 57-66
57-51-33-01 787-8 . . . . ATA 57-66
57-51-33-02 787-9 . . . . ATA 57-68
57-51-34 Wing Outboard Fixed Trailing Edge Aileron Lower Lubrication Panels . . . . ATA 57-70
57-51-34-01 787-8 . . . . ATA 57-70
57-51-34-02 787-9 . . . . ATA 57-72
57-51-35 Wing Outboard Fixed Trailing Edge Aileron Blister Fairing Seals . . . . ATA 57-74
57-51-35-01 787-8 . . . . ATA 57-74
57-51-35-02 787-9 . . . . ATA 57-76
57-53-01 Inboard Flap Fillet Fairing Access Panels . . . . ATA 57-78

57-53-02 **Inboard Flap Lower Seal At Side Of Body** . . . . . ATA 57-80
57-53-02-01 **787-8** . . . . . ATA 57-80
57-53-02-02 **787-9** . . . . . ATA 57-82
57-53-11 **Outboard Flap Support Number 1, 2, 7 And 8 Aft Fairing Seals** . . . . . ATA 57-84
57-53-11-01 **787-8** . . . . . ATA 57-84
57-53-11-02 **787-9** . . . . . ATA 57-86
57-53-12 **Outboard Flap Support Number 1, 2, 7 And 8 Aft Fairing** . . . . . ATA 57-88
57-53-12-01 **787-8** . . . . . ATA 57-88
57-53-12-02 **787-9** . . . . . ATA 57-90
57-53-13 **Outboard Flap Support Number 2 And 7 Aft Fairing Doors** . . . . . ATA 57-92
57-53-13-01 **787-8** . . . . . ATA 57-92
57-53-13-02 **787-9** . . . . . ATA 57-94
57-53-14 **Outboard Flap Outboard End Seals** . . . . . ATA 57-96
57-53-14-01 **787-8** . . . . . ATA 57-96
57-53-14-02 **787-9** . . . . . ATA 57-98
57-60-01 **Aileron Inboard Forward Blister Fairing** . . . . . ATA 57-100
57-60-01-01 **787-8** . . . . . ATA 57-100
57-60-01-02 **787-9** . . . . . ATA 57-102
57-60-02 **Aileron Inboard Aft Blister Fairing** . . . . . ATA 57-104
57-60-02-01 **787-8** . . . . . ATA 57-104
57-60-02-02 **787-9** . . . . . ATA 57-106
57-60-03 **Aileron Outboard Forward Blister Fairing** . . . . . ATA 57-108
57-60-03-01 **787-8** . . . . . ATA 57-108
57-60-03-02 **787-9** . . . . . ATA 57-110
57-60-04 **Aileron Outboard Aft Blister Fairing** . . . . . ATA 57-112
57-60-04-01 **787-8** . . . . . ATA 57-112
57-60-04-02 **787-9** . . . . . ATA 57-114

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57-25-01 Wing Vortex Generator

TQA to TQF

Interval	Installed	Required	Procedure
N/A	12	See below	**N/A**

One per wing may be missing.

a. Reduce performance limited weights by:

--------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • ---------

OPERATIONS (O)

TAKE-OFF

No decrement

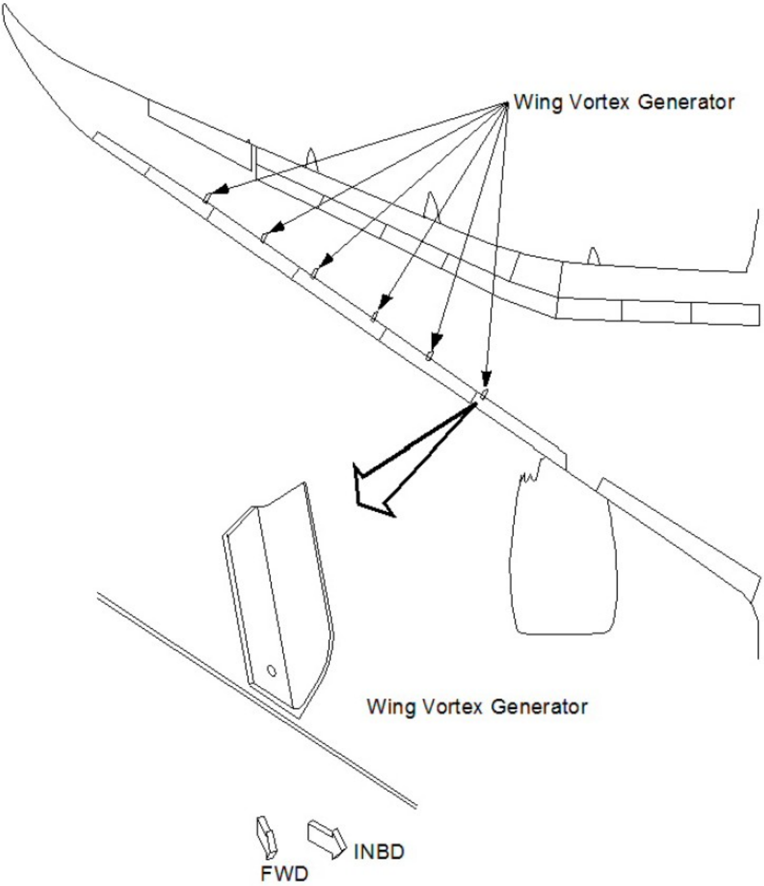
ENROUTE CLIMB

No decrement

APPROACH AND LANDING

No decrement

LOCATION


Wing Vortex Generator
Wing Vortex Generator
INBD
FWD

57-25-02 Wing-Body Fairing Flap Door

57-25-02-01 787-8

TQA to TQF

Interval	Installed	Required	Procedure
N/A	2	See below	**(O) (MV)**

Both doors may be missing provided.

a. The landing gear must remain extended for the first 10 minutes after takeoff and the penalties shown below should also be applied.

b. Procedure:

   1) Do not retract landing gear for 10 minutes after takeoff. In the event of an engine failure after V1, retract the landing gear until a minimum of 1,500 feet above airport elevation and terrain clearance is assured. While maintaining terrain clearance, extend the gear for the balance of the 10 minutes.

c. Increase flight planning fuel by 1,225 kg for landing gear extended for 10 minutes.

d. Reduce performance limited weights by:

Note: The CDL penalty for a missing door is negligible for takeoff and enroute and the above procedure does not apply when operating with Gear Down Dispatch data in Performance Dispatch (PD) chapter for the entire flight.

--------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • ---------

OPERATIONS (O)

TAKE-OFF

4,990 kg

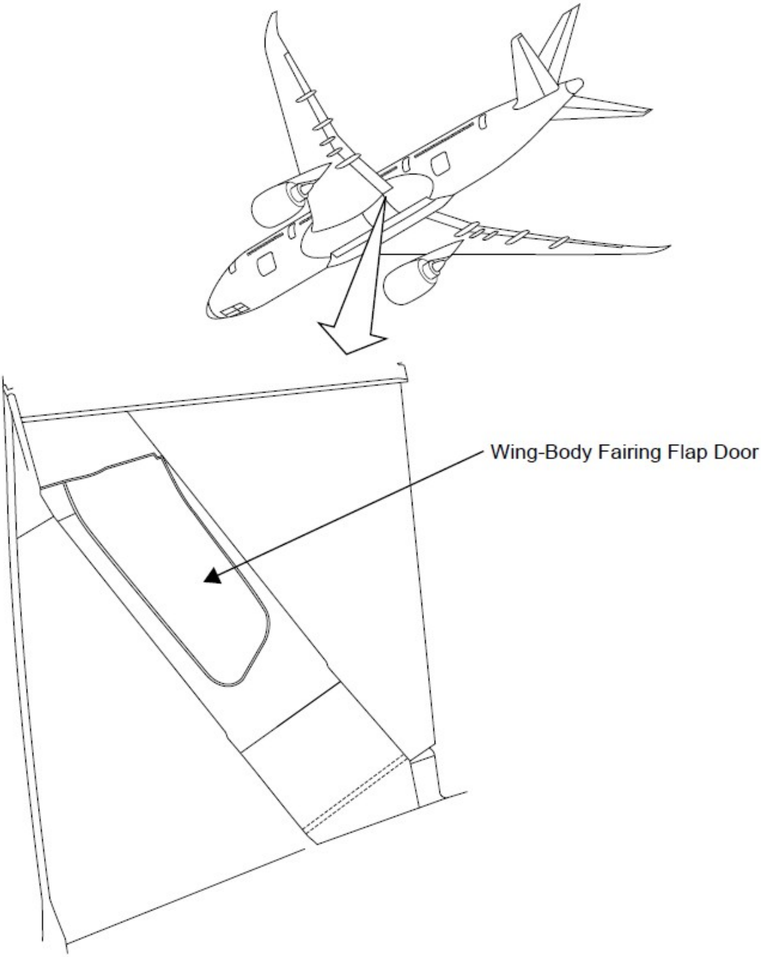
ENROUTE CLIMB

272 kg

APPROACH AND LANDING

No decrement

LOCATION


Wing-Body Fairing Flap Door

57-25-02 Wing-Body Fairing Flap Door

57-25-02-02 **787-9** **TWA to TWB**

Interval	Installed	Required	Procedure
N/A	2	See below	**(O) (MV)**

Both doors may be missing provided.

a. The landing gear must remain extended for the first 10 minutes after takeoff and the penalties shown below should also be applied.

b. Procedure:

   1) Do not retract landing gear for 10 minutes after takeoff. In the event of an engine failure after V1, retract the landing gear until a minimum of 1,500 feet above airport elevation and terrain clearance is assured. While maintaining terrain clearance, extend the gear for the balance of the 10 minutes.

c. Increase flight planning fuel by 1,315 kg for landing gear extended for 10 minutes.

d. Reduce performance limited weights by:

Note: The CDL penalty for a missing door is negligible for takeoff and enroute and the above procedure does not apply when operating with Gear Down Dispatch data in Performance Dispatch (PD) chapter for the entire flight.

--------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • ---------

OPERATIONS (O)

TAKE-OFF

907 kg

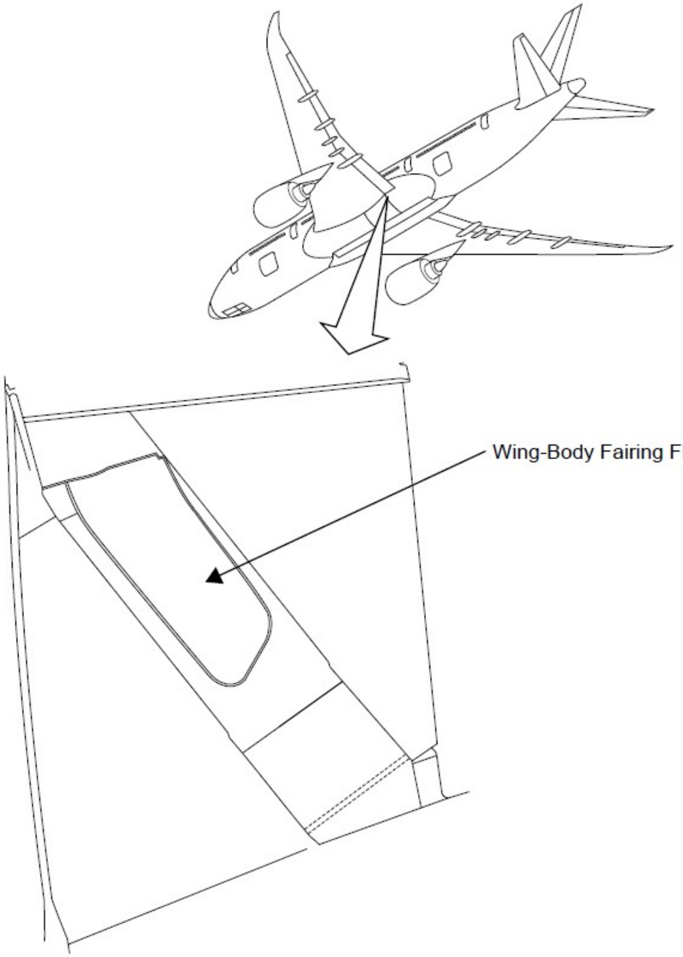
ENROUTE CLIMB

295 kg

APPROACH AND LANDING

No decrement

LOCATION


Wing-Body Fairing Flap Door

57-25-03 Wing-Body Fairing Flap Door Seal

57-25-03-01 **787-8** **TQA to TQF**

Interval	Installed	Required	Procedure
N/A	2	See below	**(O) (MV)**

Any amount of seal may be missing provided.

a. When any portion of seal is missing, the corresponding door must be removed and the landing gear must remain extended for the first 10 minutes after takeoff and the penalties shown below should also be applied.

b. Procedure:

   1) Do not retract landing gear for 10 minutes after takeoff. In the event of an engine failure after V1, retract the landing gear until a minimum of 1,500 feet above airport elevation and terrain clearance is assured. While maintaining terrain clearance, extend the gear for the balance of the 10 minutes.

c. Increase flight planning fuel by 1,225 kg for landing gear extended for 10 minutes.

d. Reduce performance limited weights by:

Note: The CDL penalty for a missing seal is negligible for takeoff and enroute and the above procedure does not apply when operating with Gear Down Dispatch data in Performance Dispatch (PD) chapter for the entire flight.

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OPERATIONS (O)

TAKE-OFF

4,990 kg

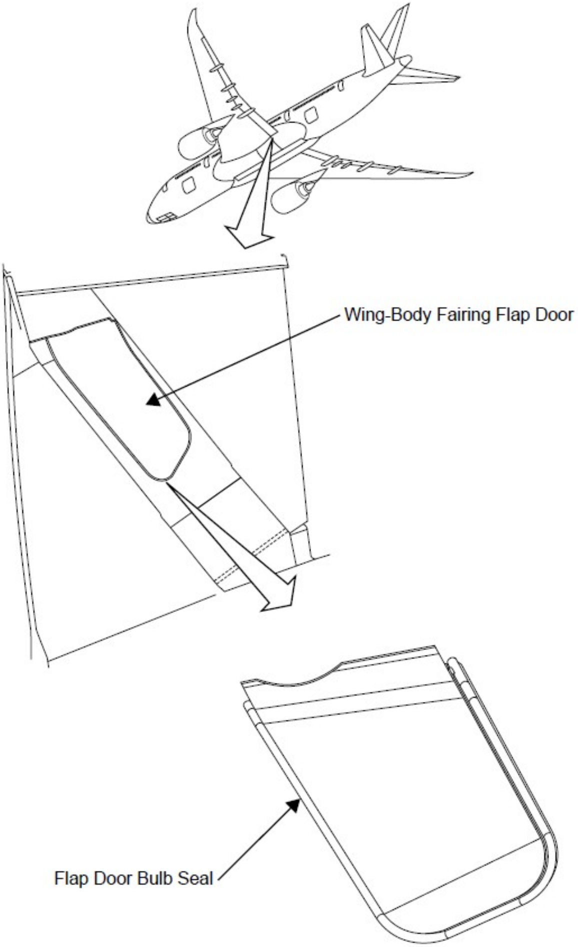
ENROUTE CLIMB

272 kg

APPROACH AND LANDING

No decrement

LOCATION


Wing-Body Fairing Flap Door
Flap Door Bulb Seal

57-25-03 **Wing-Body Fairing Flap Door Seal**

57-25-03-02 **787-9** **TWA to TWB**

Interval	Installed	Required	Procedure
N/A	2	See below	**(O) (MV)**

Any amount of seal may be missing provided.

a. When any portion of seal is missing, the corresponding door must be removed and the landing gear must remain extended for the first 10 minutes after takeoff and the penalties shown below should also be applied.

b. Procedure:

  1) Do not retract landing gear for 10 minutes after takeoff. In the event of an engine failure after V1, retract the landing gear until a minimum of 1,500 feet above airport elevation and terrain clearance is assured. While maintaining terrain clearance, extend the gear for the balance of the 10 minutes.

c. Increase flight planning fuel by 1,315 kg for landing gear extended for 10 minutes.

d. Reduce performance limited weights by:

Note: The CDL penalty for a missing seal is negligible for takeoff and enroute and the above procedure does not apply when operating with Gear Down Dispatch data in Performance Dispatch (PD) chapter for the entire flight.

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OPERATIONS (O)

TAKE-OFF

907 kg

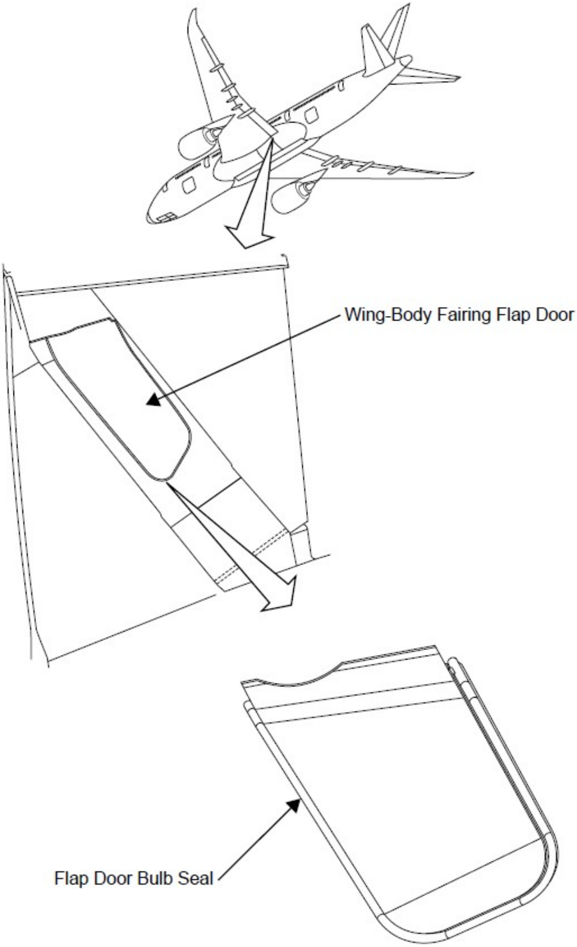
ENROUTE CLIMB

295 kg

APPROACH AND LANDING

No decrement

LOCATION


Wing-Body Fairing Flap Door
Flap Door Bulb Seal

UNCONTROLLED IF DOWNLOADED OR PRINTED

57-26-01 Wing to Body Strakelet Seal

Interval	Installed	Required	Procedure
N/A	2	See below	**N/A**

Seal may be abraded. Cuts or holes through the outer surface are not permitted. Reduce performance limited weights by:

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OPERATIONS (O)

TAKE-OFF

No decrement

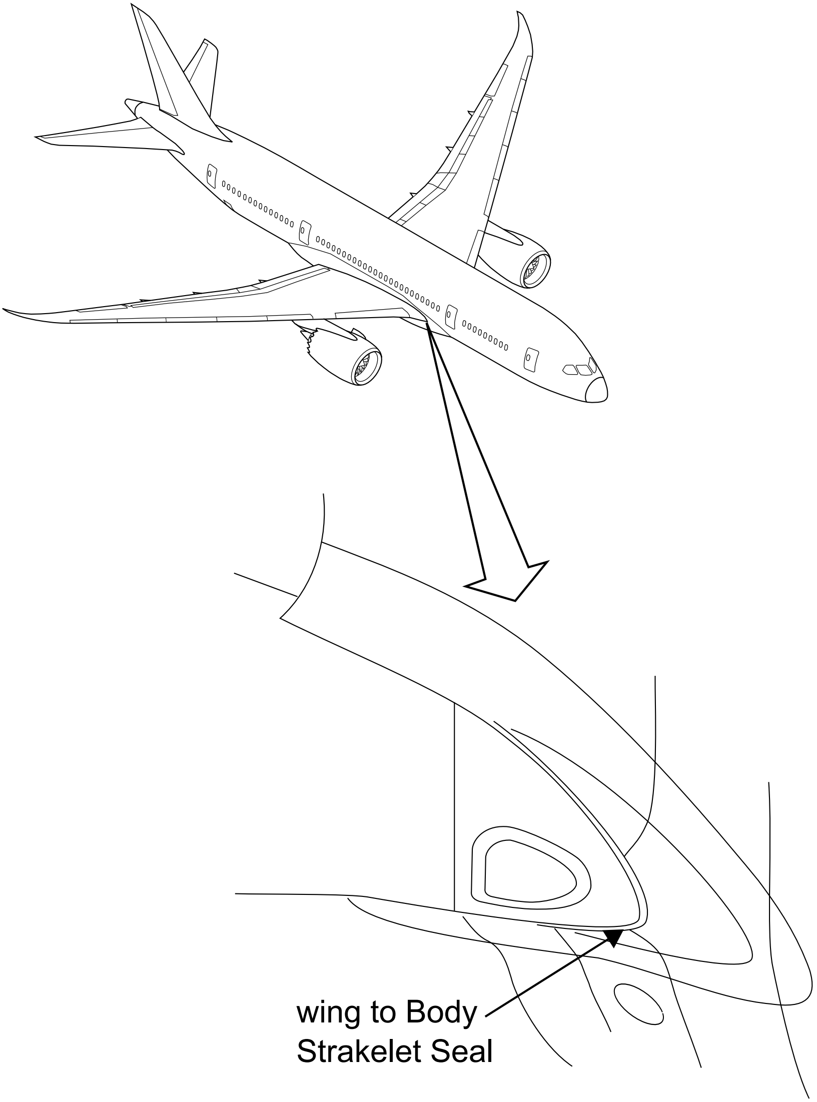
ENROUTE CLIMB

No decrement

APPROACH AND LANDING

No decrement

LOCATION


wing to Body Strakelet Seal

57-31-01 Removable Wing Tip

57-31-01-01 **787-8** **TQA to TQF**

Interval	Installed	Required	Procedure
N/A	2	See below	(O) (MV)

Both must be removed.

a. All wires must be capped and stowed and wingtip rear position lights must be considered inoperative.

b. The following aft CG limits must be observed:

Weight (kg)	Aft CG Limit (% MAC)
104,100	24.0
127,005	30.0
154,221	34.5
190,962	34.5
226,796	25.7
228,384	23.4

c. Reduce performance limited weights by:

Note: 1. For operations with wing tips removed, the four trailing type dischargers (CDL Item 23-61-01) on each wing just inboard of the removable tip may not be missing.
2. The airplane must be dispatched using MEL Item 33-43-01.

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OPERATIONS (O)

TAKE-OFF

29,370 kg

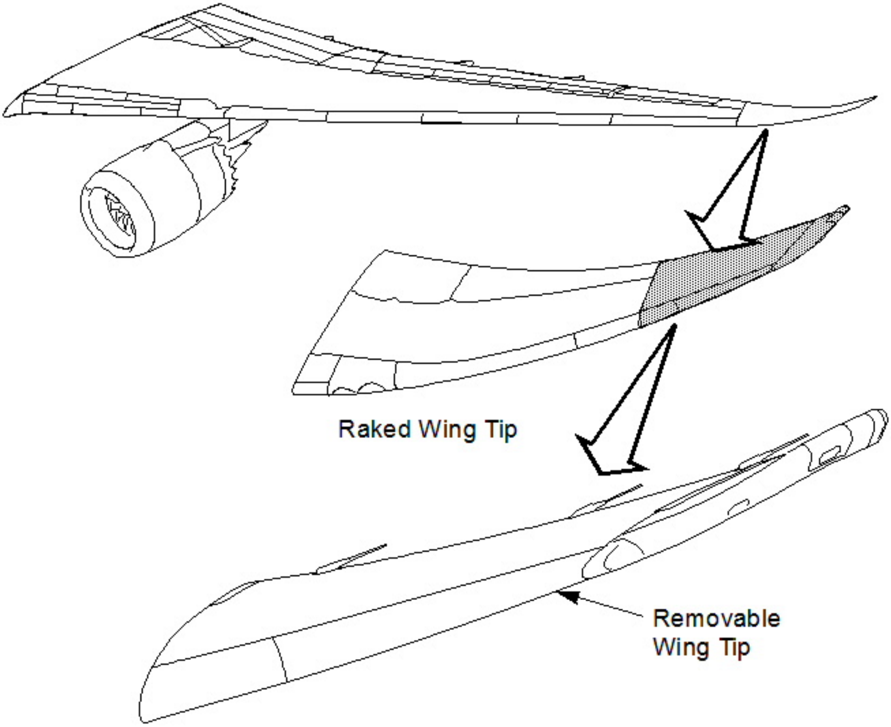
ENROUTE CLIMB

4,286 kg

APPROACH AND LANDING

12,655 kg

LOCATION


Raked Wing Tip
Removable Wing Tip

57-31-01 Removable Wing Tip

57-31-01-02 787-9

TWA to TWB

Interval	Installed	Required	Procedure
N/A	2	See below	**(O) (MV)**

Both must be removed.

a. All wires must be capped and stowed and wingtip rear position lights must be considered inoperative.

b. Operators must observe the following aft CG limits:

Weight (kg)	Aft CG Limit (% MAC)
110,677	24.0
155,763	32.5
172,365	34.5
217,270	34.5
249,339	27.1
252,650	26.4
253,558	25.7

c. Reduce performance limited weights by:

Note: 1. For operations with wing tips removed, the four trailing type dischargers (CDL Item 23-61-01) on each wing just inboard of the removable tip may not be missing.
2. The airplane must be dispatched using MEL Item 33-43-01.

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OPERATIONS (O)

TAKE-OFF

38,238 kg

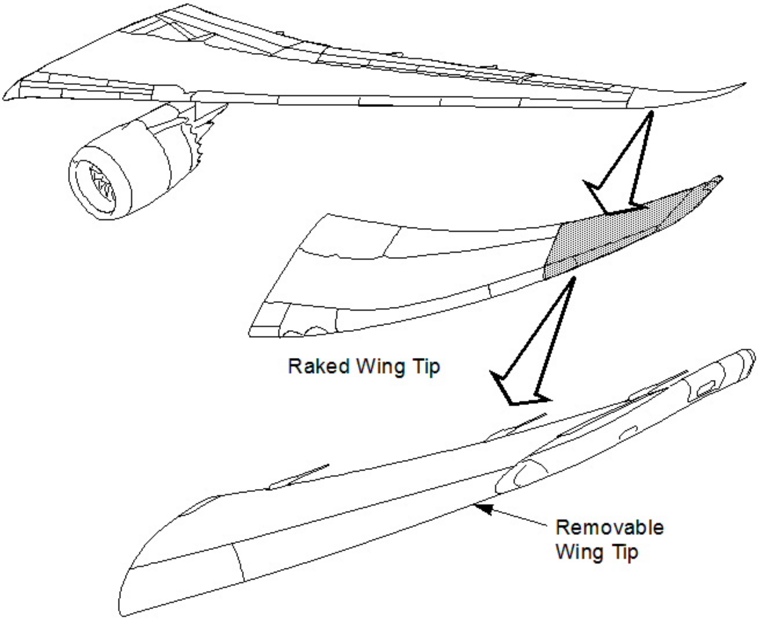
ENROUTE CLIMB

4,445 kg

APPROACH AND LANDING

12,655 kg

LOCATION


Raked Wing Tip
Removable Wing Tip

57-43-01 Slat Spanwise Flow Seal

57-43-01-01 **787-8** **TQA to TQF**

Interval	Installed	Required	Procedure
N/A	24	See below	**(O) (MV)**

Up to two seals on each wing may be missing.

a. Inboard end seals on slats 5 and 8, and outboard end seals on slats 6 and 7 may not be missing.

b. Reduce performance limited weights for each missing seal by:

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OPERATIONS (O)

TAKE-OFF

113 kg

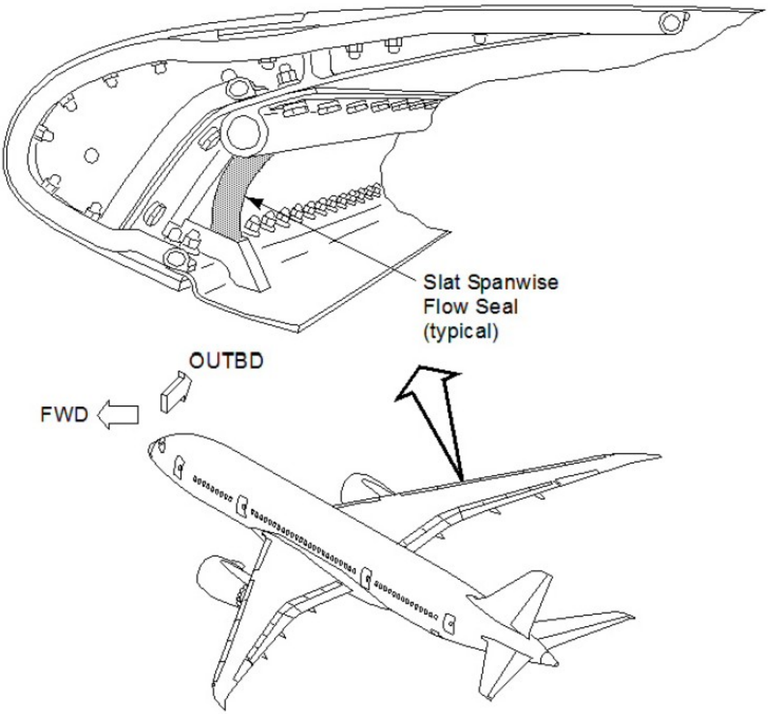
ENROUTE CLIMB

113 kg

APPROACH AND LANDING

No decrement

LOCATION


Slat Spanwise
Flow Seal
(typical)
OUTBD
FWD

57-43-01 **Slat Spanwise Flow Seal**

57-43-01-02 **787-9** **TWA to TWB**

Interval	Installed	Required	Procedure
N/A	24	See below	**(O) (MV)**

Up to two seals on each wing may be missing.

a. Inboard end seals on slats 5 and 8, and outboard end seals on slats 6 and 7 may not be missing.

b. Reduce performance limited weights for each missing seal by

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OPERATIONS (O)

TAKE-OFF

159 kg

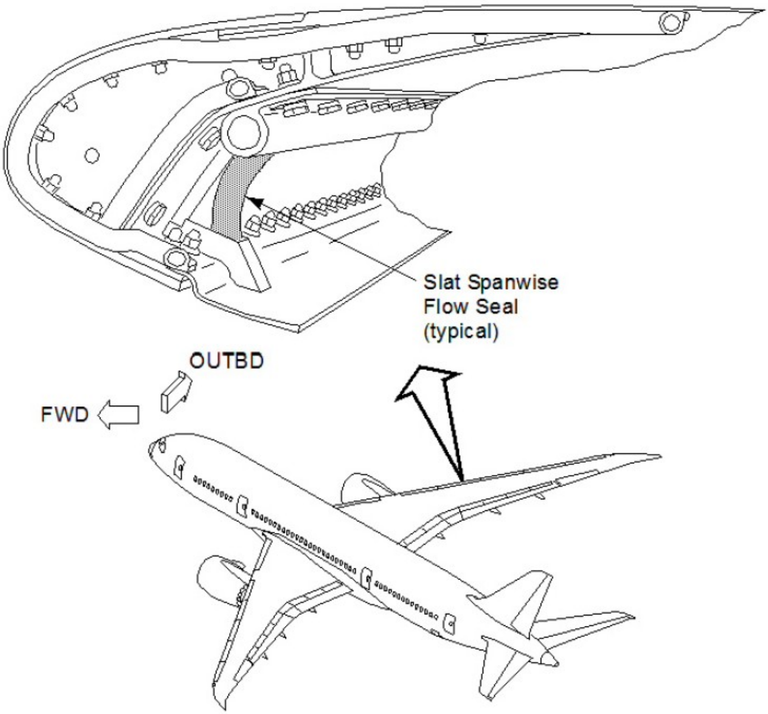
ENROUTE CLIMB

113 kg

APPROACH AND LANDING

No decrement

LOCATION


Slat Spanwise
Flow Seal
(typical)
OUTBD
FWD

UNCONTROLLED IF DOWNLOADED OR PRINTED

57-43-02 Slat Spanwise Bulb Seal

57-43-02-01 **787-8** **TQA to TQF**

Interval	Installed	Required	Procedure
N/A	22	See below	**(O) (MV)**

One per wing may be missing.

a. Seals on slats 5 and 8 may not be missing. The two most outboard seals and the most outboard two feet of the third most outboard seal on slats 6 and 7 may not be missing.

b, Seals may not be missing in combination with CDL Items 57-43-03 or 57-43-04 on the same slat.

c. Reduce performance limited weights for each foot of missing seal by:

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OPERATIONS (O)

TAKE-OFF

113 kg

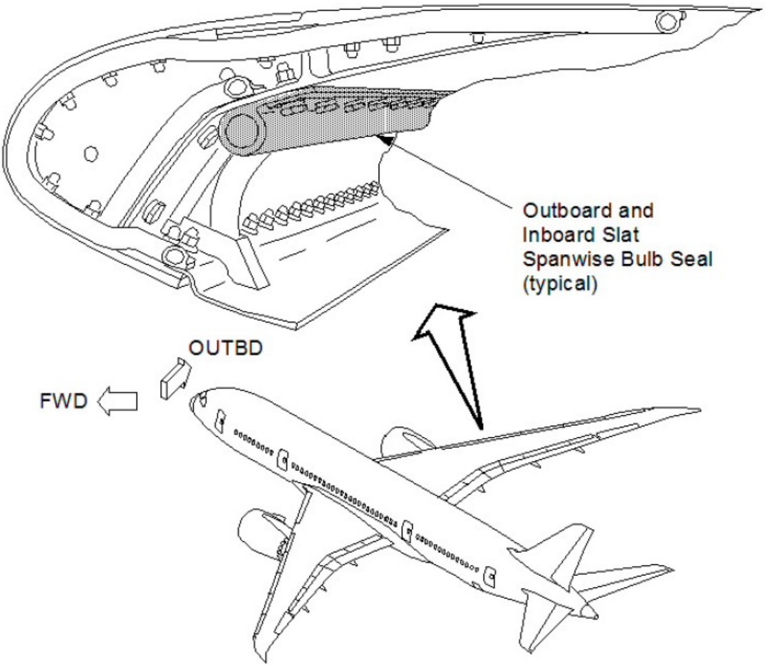
ENROUTE CLIMB

136 kg

APPROACH AND LANDING

No decrement

LOCATION


Outboard and
Inboard Slat
Spanwise Bulb Seal
(typical)
OUTBD
FWD

57-43-02 **Slat Spanwise Bulb Seal**

57-43-02-02 **787-9** **TWA to TWB**

Interval	Installed	Required	Procedure
N/A	22	See below	**(O) (MV)**

One per wing may be missing.

a. Seals on slats 5 and 8 may not be missing. The two most outboard seals and the most outboard two feet of the third most outboard seal on slats 6 and 7 may not be missing.

b, Seals may not be missing in combination with CDL Items 57-43-03 or 57-43-04 on the same slat.

c. Reduce performance limited weights for each foot of missing seal by:

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OPERATIONS (O)

TAKE-OFF

181 kg

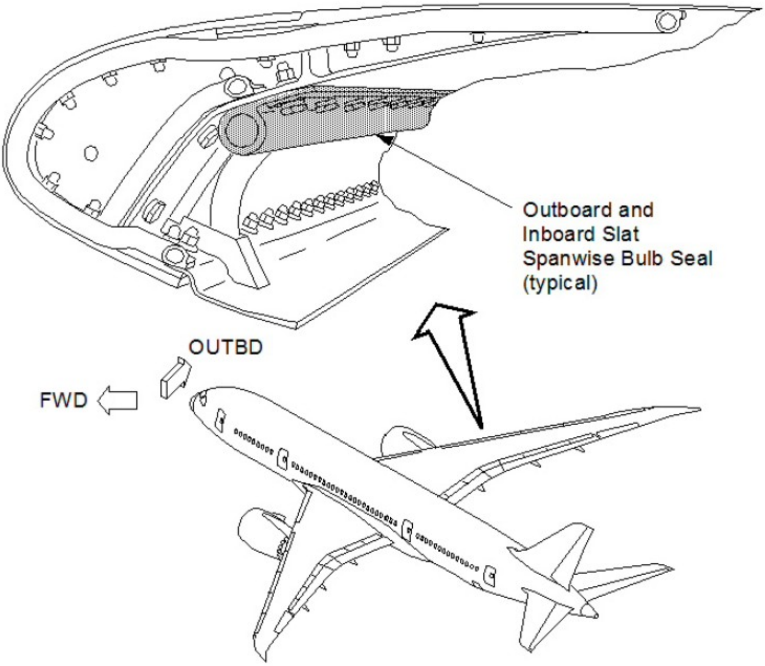
ENROUTE CLIMB

136 kg

APPROACH AND LANDING

No decrement

LOCATION


Outboard and Inboard Slat Spanwise Bulb Seal (typical)
OUTBD
FWD

57-43-03 Slat Track Fairing Panel (Flex Doors)

57-43-03-01 787-8

TQA to TQF

Interval	Installed	Required	Procedure
N/A	26	See below	**N/A**

Up to twenty may be missing.

a. Panels on slats 5 and 8, and the outboard panel on slats 6 and 7 may not be missing.

b. Panels may not be missing in combination with CDL Item 57-43-02 (slat spanwise bulb seal) on the same slat.

c. Reduce performance limited weights for any number missing by

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OPERATIONS (O)

FINAL CLIMB

Negligible

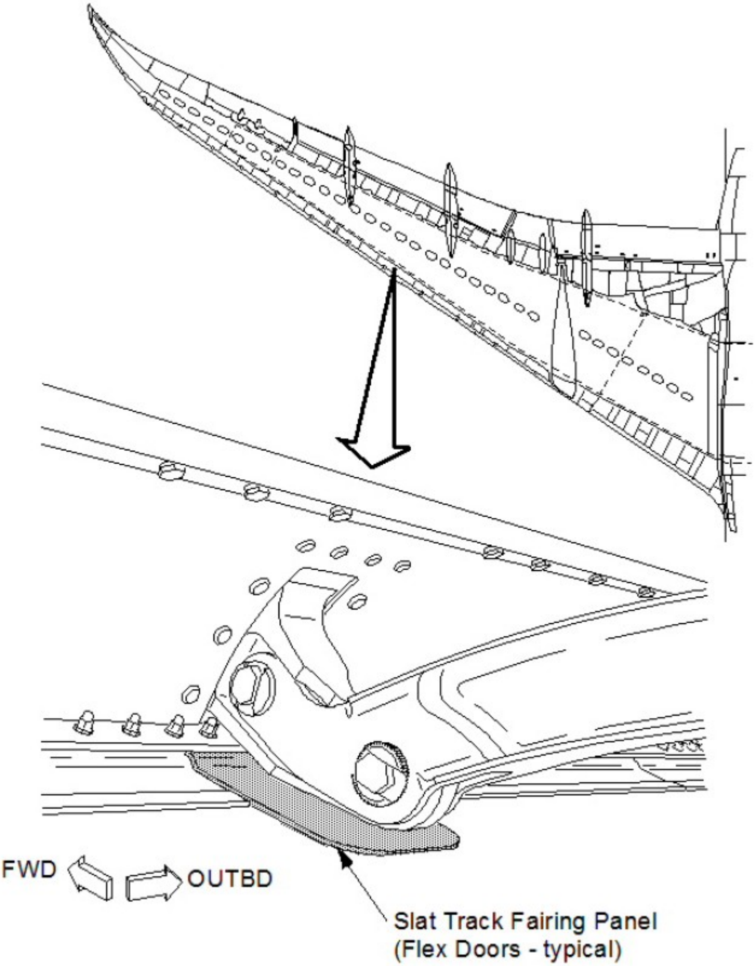
ENROUTE CLIMB

Negligible

APPROACH AND LANDING

No decrement

LOCATION


FWD
OUTBD
Slat Track Fairing Panel
(Flex Doors - typical)

57-43-03 **Slat Track Fairing Panel (Flex Doors)**

57-43-03-02 **787-9** **TWA to TWB**

Interval	Installed	Required	Procedure
N/A	26	See below	**N/A**

Up to twenty may be missing.

a. Panels on slats 5 and 8, and the outboard panel on slats 6 and 7 may not be missing.
b. Panels may not be missing in combination with CDL Item 57-43-02 (slat spanwise bulb seal) on the same slat.
c. Reduce performance limited weights for any number missing by

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OPERATIONS (O)

FINAL CLIMB

68 kg

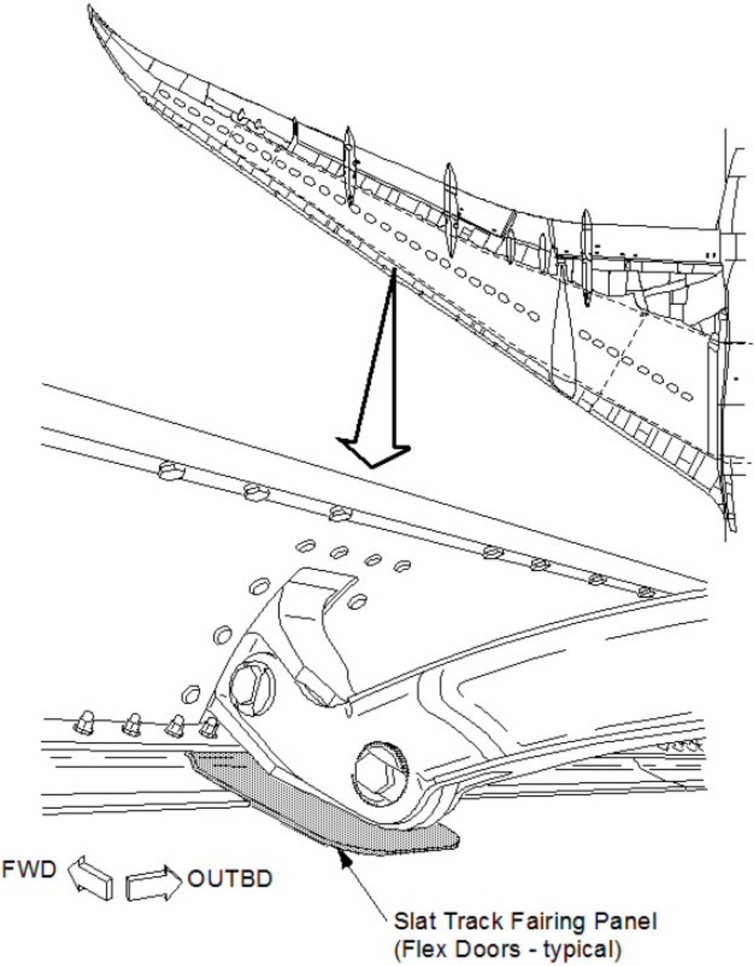
ENROUTE CLIMB

Negligible

APPROACH AND LANDING

No decrement

LOCATION


FWD
OUTBD
Slat Track Fairing Panel
(Flex Doors - typical)

57-43-04 Slat Spanwise Lower Flexible Seal (Flex Skirts)

57-43-04-01 **787-8** **TQA to TQF**

Interval	Installed	Required	Procedure
N/A	72	See below	**(O) (MV)**

Up to seven seals per wing may be missing.

a. Seals may not be missing in combination with CDL Items 57-43-02 on the same slat.

b. Seals on slats 5 and 8 may not be missing. The two most outboard seals and the most outboard two feet of the third most outboard seal on slats 6 and 7 may not be missing.

c. Reduce performance limited weights for three or more missing seals by:

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OPERATIONS (O)

TAKE-OFF

227 kg

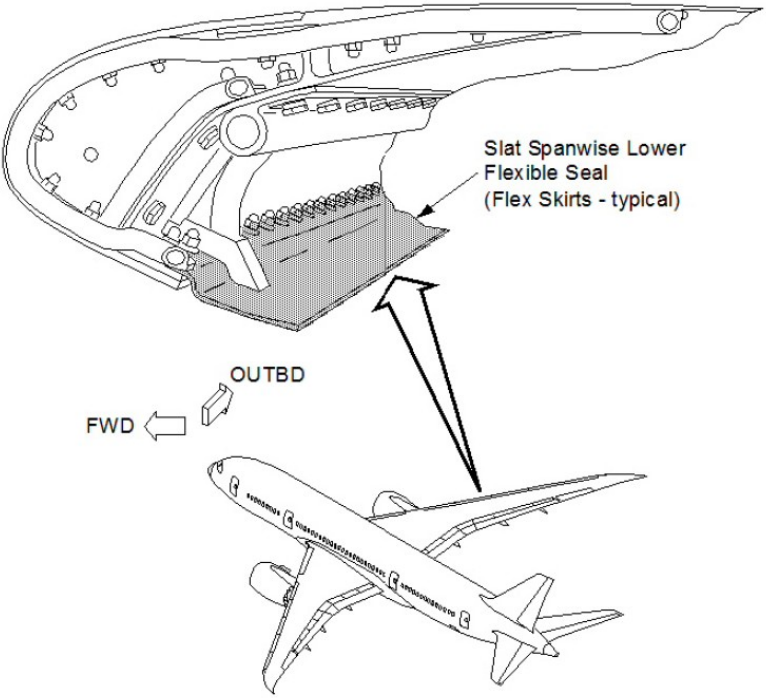
ENROUTE CLIMB

249 kg

APPROACH AND LANDING

No decrement

LOCATION


Slat Spanwise Lower
Flexible Seal
(Flex Skirts - typical)
OUTBD
FWD

UNCONTROLLED IF DOWNLOADED OR PRINTED

57-43-04 Slat Spanwise Lower Flexible Seal (Flex Skirts)

57-43-04-02 **787-9** **TWA to TWB**

Interval	Installed	Required	Procedure
N/A	72	See below	**(O) (MV)**

Up to seven seals per wing may be missing.

a. Seals may not be missing in combination with CDL Items 57-43-02 on the same slat.

b. Seals on slats 5 and 8 may not be missing. The three outboard seals on slats 6 and 7 may not be missing, and the most inboard seal on slats 4 and 9 may not be missing.

c. Reduce performance limited weights for three or more missing seals by:

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OPERATIONS (O)

TAKE-OFF

340 kg

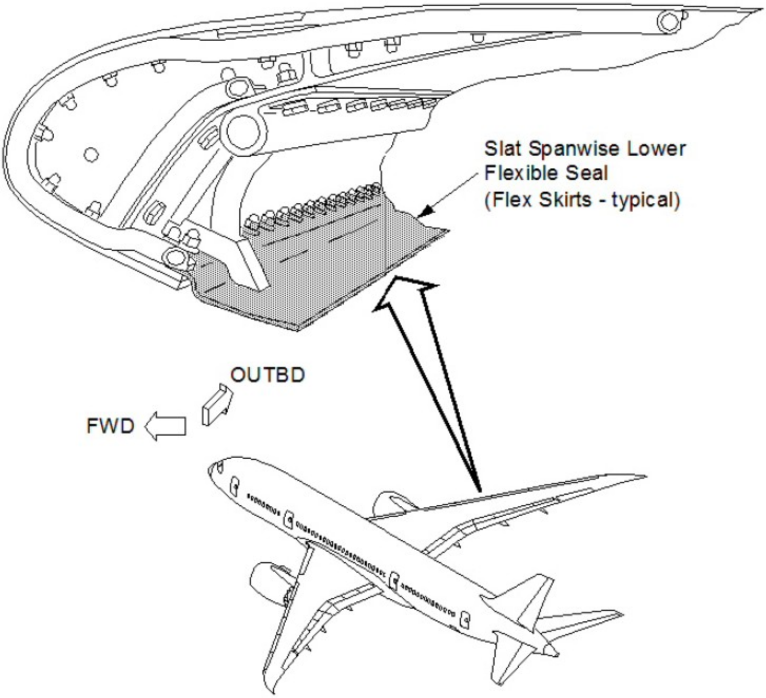
ENROUTE CLIMB

249 kg

APPROACH AND LANDING

No decrement

LOCATION


Slat Spanwise Lower
Flexible Seal
(Flex Skirts - typical)
OUTBD
FWD

57-43-05 Slat End Seals (Inboard Bulb Seals for Slats 6 and 7; Outboard Bulb Seals for Slats 1 and 12)

57-43-05-01 **787-8** **TQA to TQF**

Interval	Installed	Required	Procedure
N/A	10	See below	**(O) (MV)**

Any number may be missing.

a. Reduce performance limited weights cumulatively for each slat with one or more missing seals by:

Note: The inboard slat end seals on slats 5 and 8 and the outboard slat seals on slats 6 and 7 are not allowed to be missing.

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OPERATIONS (O)

TAKE-OFF

227 kg

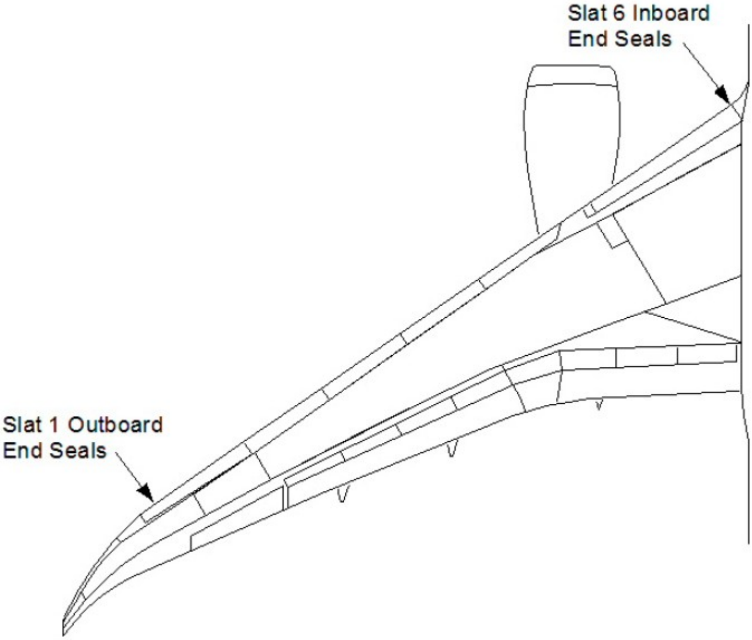
ENROUTE CLIMB

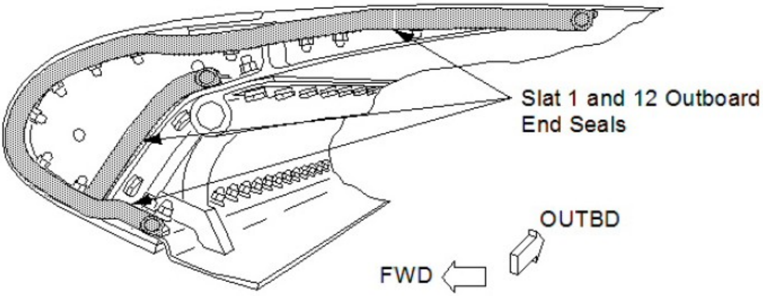
249 kg

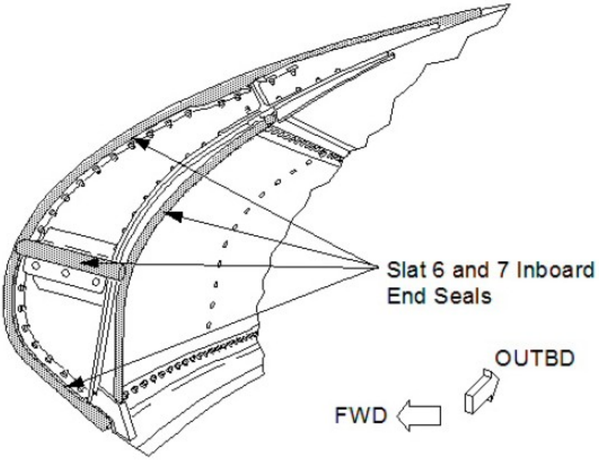
APPROACH AND LANDING

No decrement

LOCATION


Slat 6 Inboard End Seals
Slat 1 Outboard End Seals


Slat 1 and 12 Outboard End Seals
OUTBD
FWD


Slat 6 and 7 Inboard End Seals
OUTBD
FWD

57-43-05 Slat End Seals (Inboard Bulb Seals for Slats 6 and 7; Outboard Bulb Seals for Slats 1 and 12)

57-43-05-02 **787-9** **TWA to TWB**

Interval	Installed	Required	Procedure
N/A	10	See below	**(O) (MV)**

Any number may be missing.

a. Reduce performance limited weights cumulatively for each slat with one or more missing seals by:

Note: The inboard slat end seals on slats 5 and 8 and the outboard slat seals on slats 6 and 7 are not allowed to be missing.

OPERATIONS (O)

TAKE-OFF

340 kg

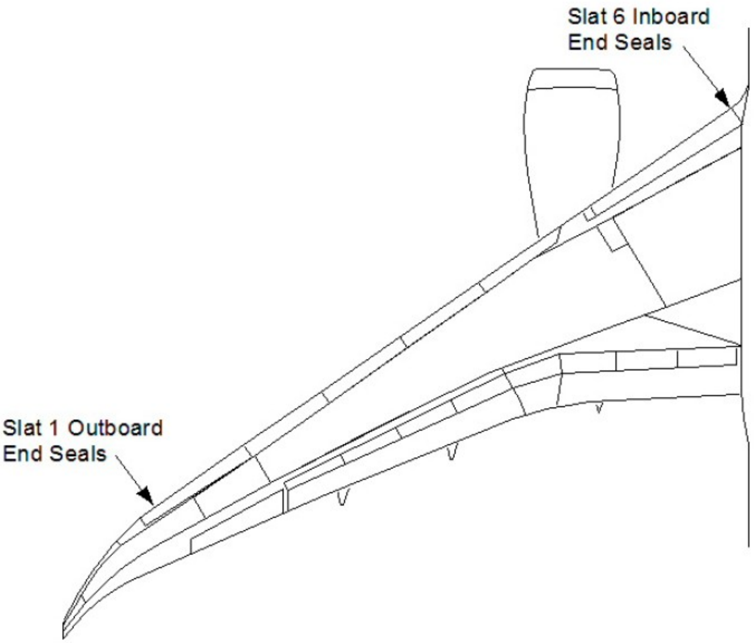
ENROUTE CLIMB

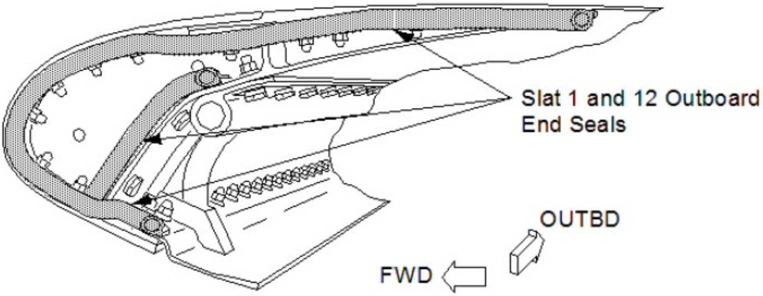
272 kg

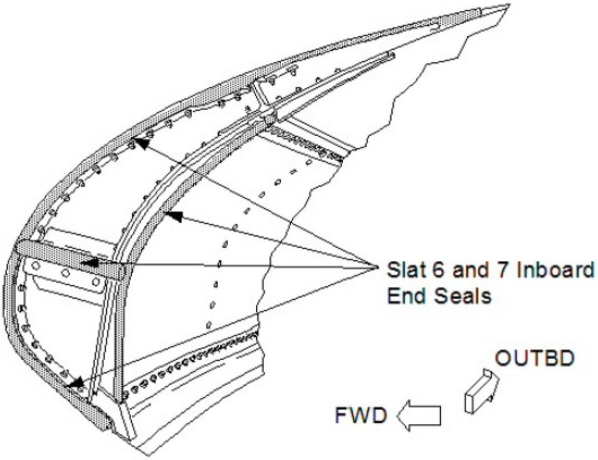
APPROACH AND LANDING

No decrement

LOCATION


Slat 6 Inboard End Seals
Slat 1 Outboard End Seals


Slat 1 and 12 Outboard End Seals
OUTBD
FWD


Slat 6 and 7 Inboard End Seals
OUTBD
FWD

57-51-21 Wing Midspan Fixed Trailing Edge Flex Panel Hinge Seals

57-51-21-01 **787-8** **TQA to TQF**

Interval	Installed	Required	Procedure
N/A	8	See below	**(O) (MV)**

Any number may be missing.

a. It should be noted that the Wing Midspan Fixed Trailing Edge Flex Panel Hinge Seals should not be confused with the Wing Inboard Fixed Trailing Edge Seals. The six seals on the wing inboard fixed trailing edge may not be missing.

b. Reduce performance limited weights for each missing seal by:

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OPERATIONS (O)

TAKE-OFF

91 kg

ENROUTE CLIMB

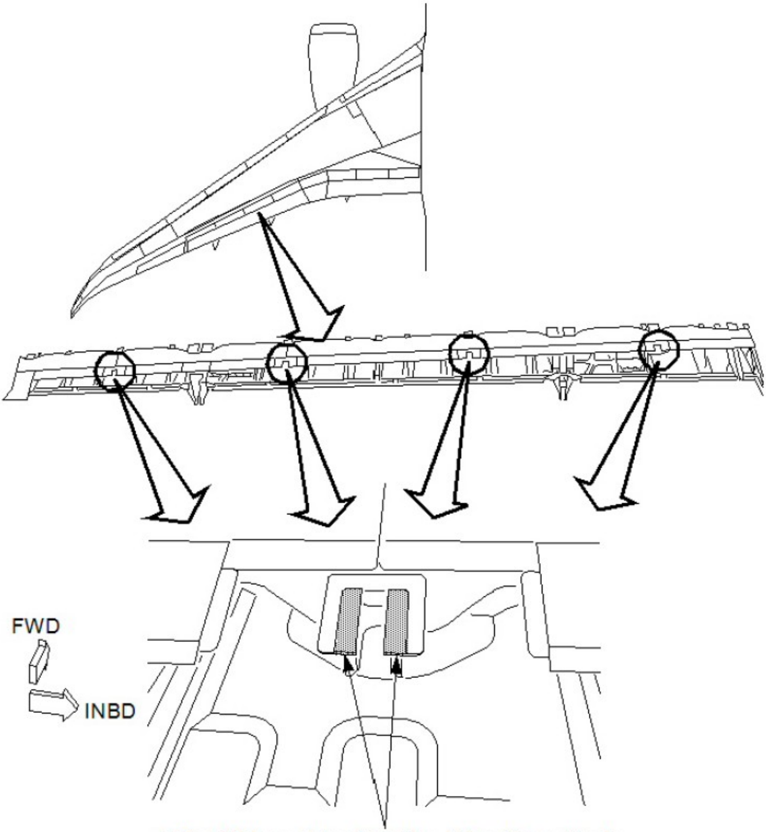
113 kg

APPROACH AND LANDING

No decrement

UNCONTROLLED IF DOWNLOADED OR PRINTED

LOCATION



Wing Midspan Fixed Trailing Edge Hinge Seals (typical)

57-51-21 Wing Midspan Fixed Trailing Edge Flex Panel Hinge Seals

57-51-21-02 **787-9** **TWA to TWB**

Interval	Installed	Required	Procedure
N/A	8	See below	**(O) (MV)**

Up to 6 seals may be missing:

a. The most inboard seal on each wing may not be missing.

b. It should be noted that the Wing Midspan Fixed Trailing Edge Flex Panel Hinge Seals should not be confused with the Wing Inboard Fixed Trailing Edge Seals. The six seals on the wing inboard fixed trailing edge may not be missing.

c. Reduce performance limited weights for each missing seal by:

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OPERATIONS (O)

TAKE-OFF

136 kg

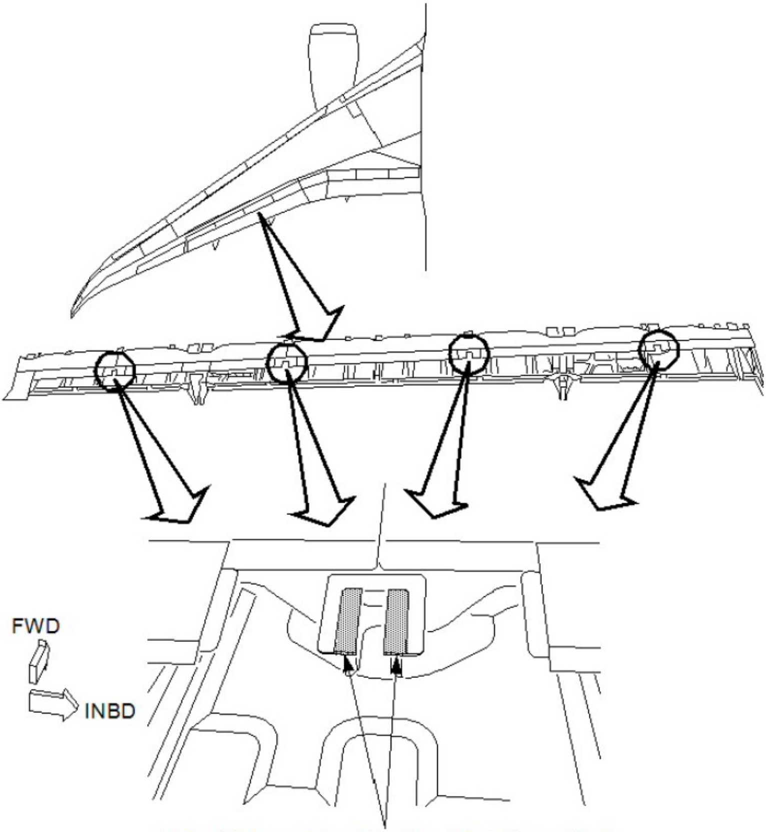
ENROUTE CLIMB

113 kg

APPROACH AND LANDING

No decrement

LOCATION



Wing Midspan Fixed Trailing Edge Hinge Seals (typical)

57-51-22 Wing Midspan Fixed Trailing Edge Flex Panel End Seals

57-51-22-01 **787-8**

TQA to TQF

Interval	Installed	Required	Procedure
N/A	32	See below	**(O) (MV)**

Up to 30 seals may be missing.

a. The most inboard midspan flex panel end seal may not be missing.

b. For less than ten seals missing the performance adjustments are negligible for takeoff and enroute climb, and no decrement for approach and landing.

c. Reduce performance limited weights for ten or more missing seals by:

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OPERATIONS (O)

TAKE-OFF

159 kg

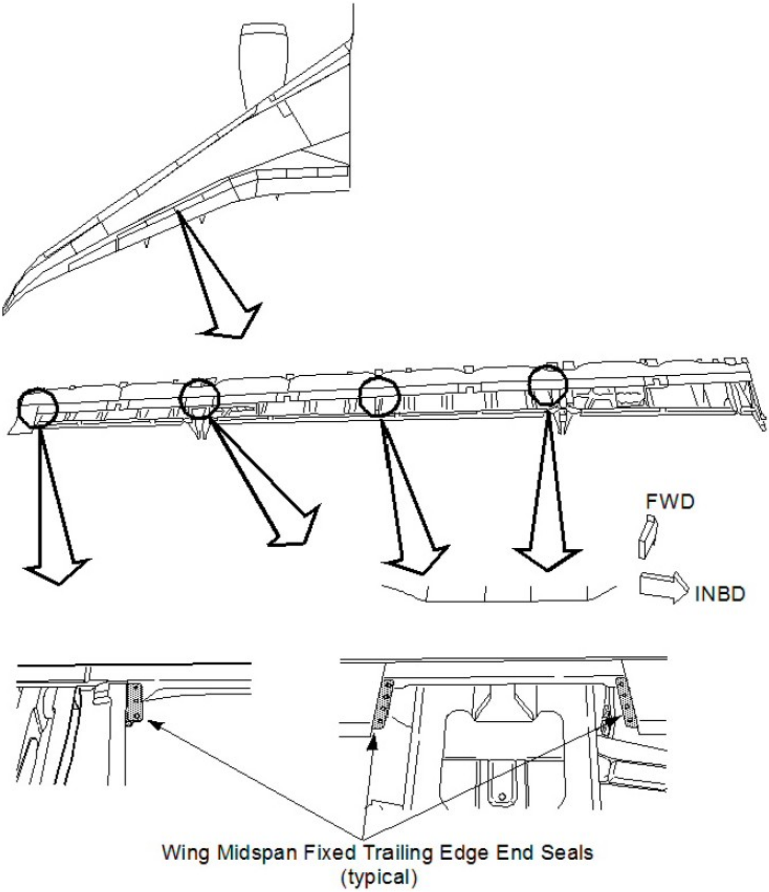
ENROUTE CLIMB

159 kg

APPROACH AND LANDING

No decrement

LOCATION


FWD
INBD
Wing Midspan Fixed Trailing Edge End Seals
(typical)

UNCONTROLLED IF DOWNLOADED OR PRINTED

57-51-22 Wing Midspan Fixed Trailing Edge Flex Panel End Seals

57-51-22-02 **787-9** **TWA to TWB**

Interval	Installed	Required	Procedure
N/A	32	See below	**(O) (MV)**

Up to 26 seals may be missing.

a. The three most inboard midspan flex panel end seals may not be missing.

b. For less than eight seals missing the performance adjustments are negligible for takeoff and enroute climb, and no decrement for approach and landing.

c. Reduce performance limited weights for eight or more missing seals by:

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OPERATIONS (O)

TAKE-OFF

181 kg

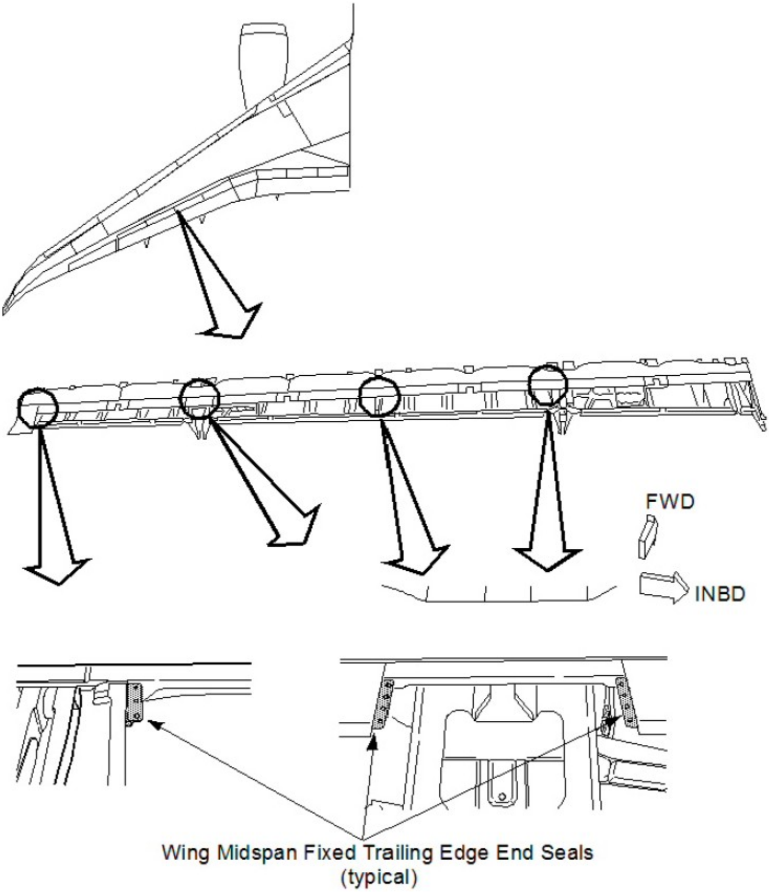
ENROUTE CLIMB

136 kg

APPROACH AND LANDING

No decrement

LOCATION


FWD
INBD
Wing Midspan Fixed Trailing Edge End Seals
(typical)

57-51-23 Wing Midspan Fixed Trailing Edge Lower Flap Seals

57-51-23-01 787-8

TQA to TQF

Interval	Installed	Required	Procedure
N/A	8	See below	**(O) (MV)**

Up to six seals may be missing.

a. The most inboard midspan lower flap seal(midspan is the area outboard of the flaperon to the outboard end of the outboard flap) may not be missing.

b. Reduce performance limited weights for each missing seals by:

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OPERATIONS (O)

TAKE-OFF

567 kg

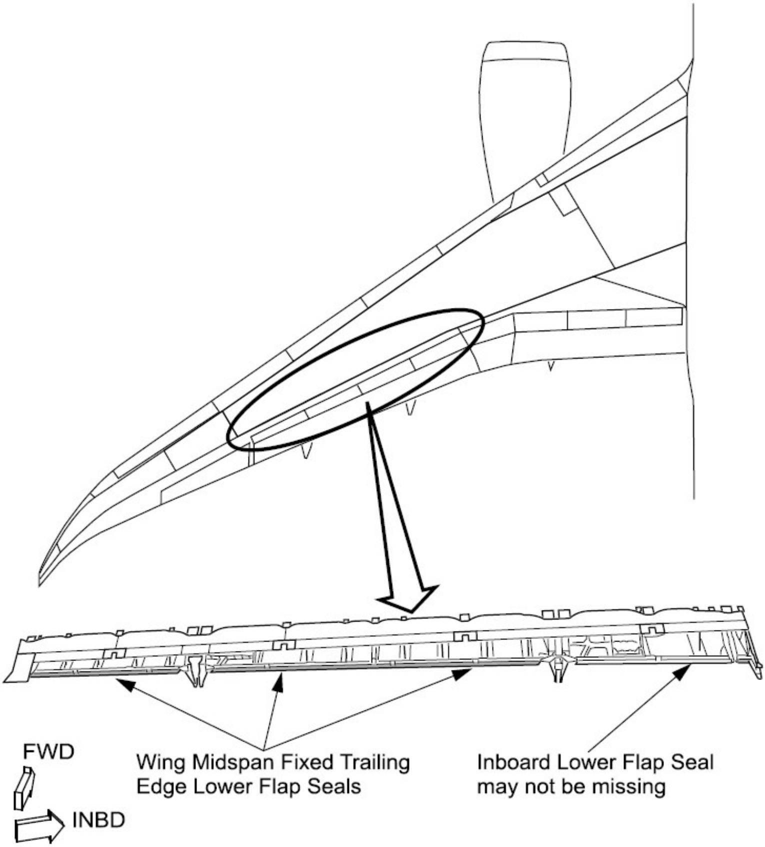
ENROUTE CLIMB

612 kg

APPROACH AND LANDING

No decrement

LOCATION


Wing Midspan Fixed Trailing Edge Lower Flap Seals
Inboard Lower Flap Seal may not be missing
FWD
INBD

57-51-23 Wing Midspan Fixed Trailing Edge Lower Flap Seals

57-51-23-02 **787-9** **TWA to TWB**

Interval	Installed	Required	Procedure
N/A	8	See below	**(O) (MV)**

Up to six seals may be missing.

a. The most inboard midspan lower flap seal(midspan is the area outboard of the flaperon to the outboard end of the outboard flap) may not be missing.

b. Reduce performance limited weights for each missing seals by:

OPERATIONS (O)

TAKE-OFF

816 kg

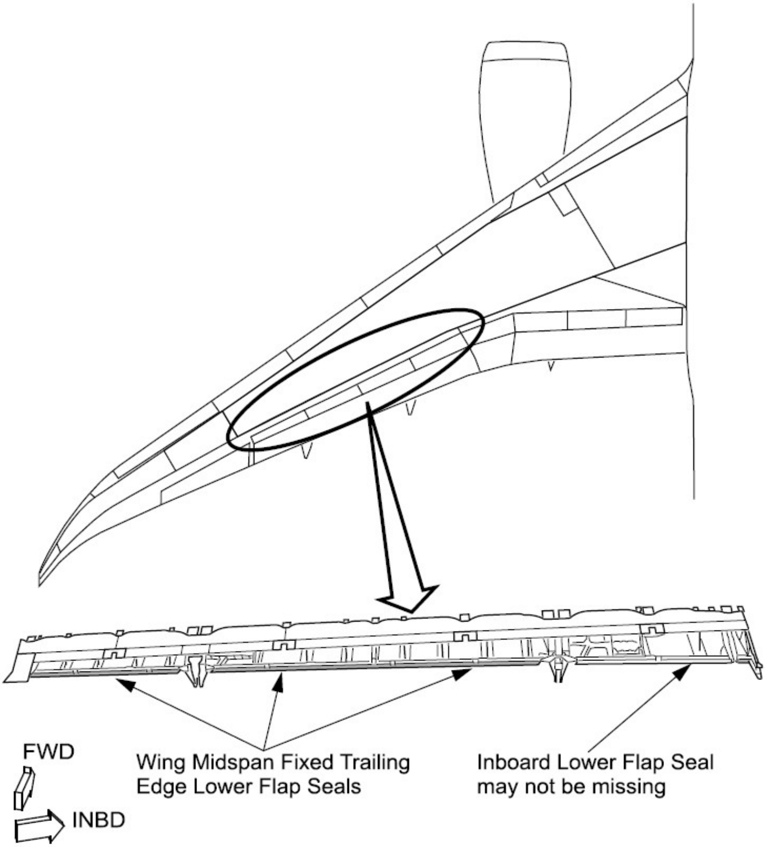
ENROUTE CLIMB

635 kg

APPROACH AND LANDING

No decrement

LOCATION


FWD
INBD
Wing Midspan Fixed Trailing Edge Lower Flap Seals
Inboard Lower Flap Seal may not be missing

57-51-24 Wing Midspan Fixed Trailing Edge Lower Removable Panels

57-51-24-01 **787-8** **TQA to TQF**

Interval	Installed	Required	Procedure
N/A	30	See below	**(O) (MV)**

One panel per wing may be missing.

a. On the MISC SYSTEM CTRLS (MSC) maintenance page, set the Overspeed Warning switch to GEAR DOWN.

b. Limit speed to 270 KIAS/0.73 Mach.

Note: Do not apply Landing Gear Extended performance penalties in Performance Dispatch (PD) chapter.

c. Reduce performance limited weights for each missing panel by:

OPERATIONS (O)

TAKE-OFF

635 kg

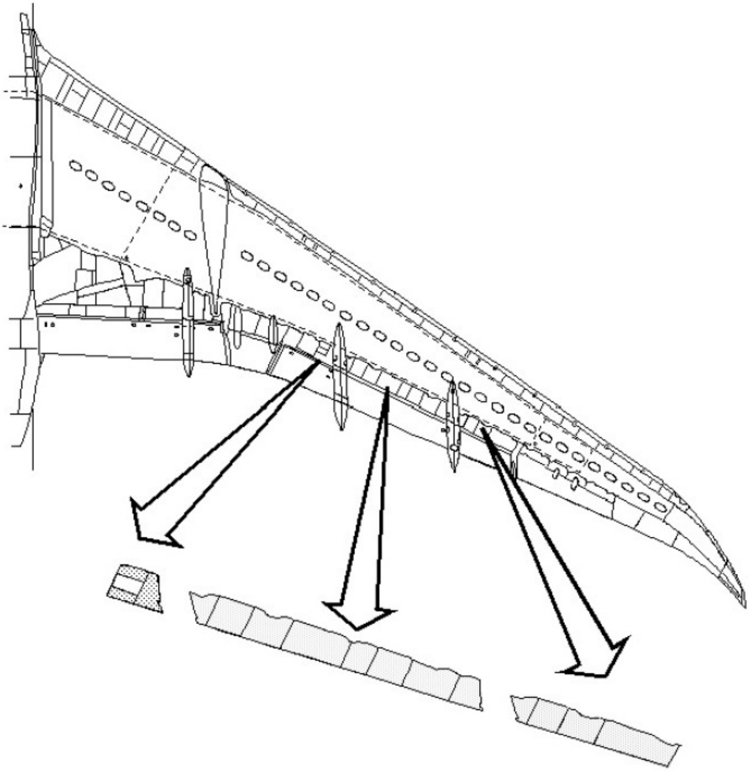
ENROUTE CLIMB

680 kg

APPROACH AND LANDING

No decrement

LOCATION



Midspan Fixed Trailing Edge Lower Removable Panels

57-51-24 Wing Midspan Fixed Trailing Edge Lower Removable Panels

57-51-24-02 **787-9** **TWA to TWB**

Interval	Installed	Required	Procedure
N/A	30	See below	**(O) (MV)**

One panel per wing may be missing.

a. The two most inboard panels on each wing may not be missing.

b. On the MISC SYSTEM CTRLS (MSC) maintenance page, set the Overspeed Warning switch to GEAR DOWN.

c. Limit speed to 270 KIAS/0.73 Mach.

Note: Do not apply Landing Gear Extended performance penalties in Performance Dispatch (PD) chapter.

d. Reduce performance limited weights for each missing panel by:

--------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • ---------

OPERATIONS (O)

TAKE-OFF

930 kg

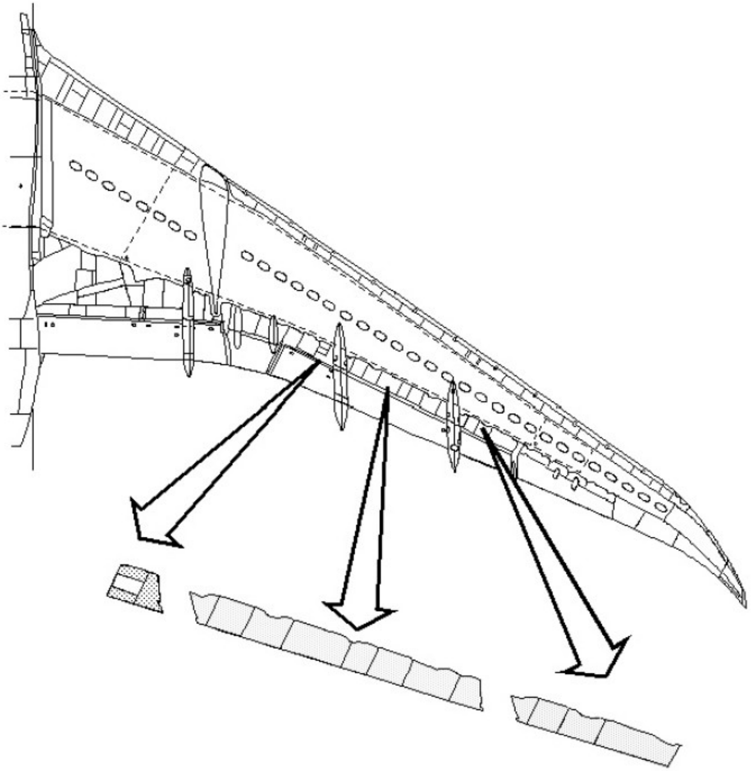
ENROUTE CLIMB

703 kg

APPROACH AND LANDING

No decrement

LOCATION



Midspan Fixed Trailing Edge Lower Removable Panels

57-51-31 Wing Outboard Fixed Trailing Edge Aileron Inboard End Seals

57-51-31-01 **787-8** **TQA to TQF**

Interval	Installed	Required	Procedure
N/A	10	See below	**(O) (MV)**

Any number may be missing.

a. The total decrement per wing should not exceed the value provided in the table. Reduce performance limited weights for each missing seal by:

OPERATIONS (O)

Maximum Decrement Per Wing	Takeoff	Enroute Climb	Approach and Landing
1,202 kg	544 kg	295 kg	227 kg

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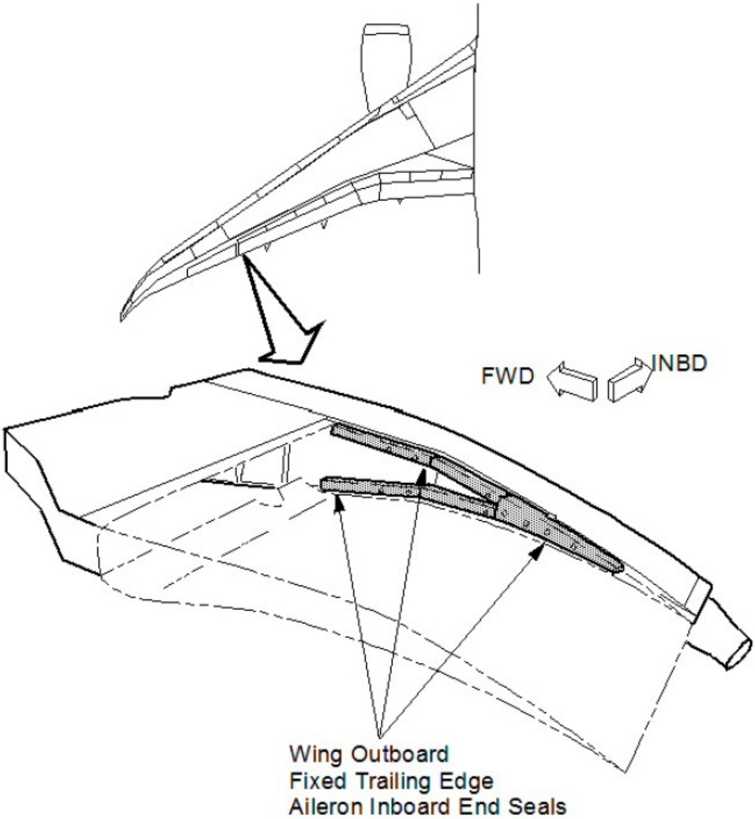
LOCATION


FWD
INBD
Wing Outboard
Fixed Trailing Edge
Aileron Inboard End Seals

57-51-31 **Wing Outboard Fixed Trailing Edge Aileron Inboard End Seals**

57-51-31-02 **787-9** **TWA to TWB**

Interval	Installed	Required	Procedure
N/A	10	See below	**(O) (MV)**

Any number may be missing.

a. The total decrement per wing should not exceed the value provided in the table. Reduce performance limited weights for each missing seal by:

OPERATIONS (O)

Maximum Decrement Per Wing	Takeoff	Enroute Climb	Approach and Landing
1,905 kg	885 kg	340 kg	227 kg

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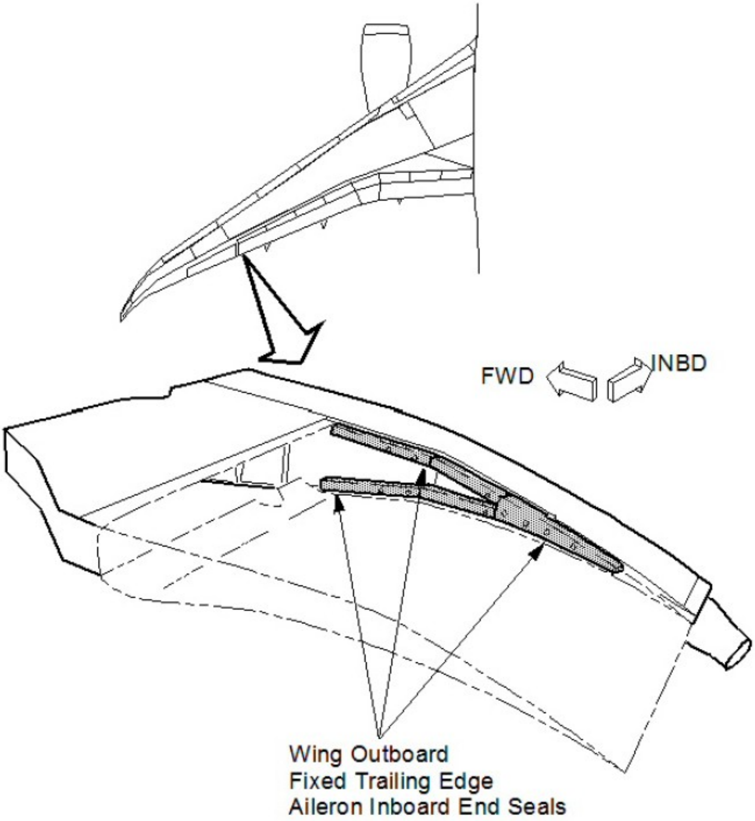
LOCATION


FWD
INBD
Wing Outboard
Fixed Trailing Edge
Aileron Inboard End Seals

57-51-32 Wing Outboard Fixed Trailing Edge Aileron Outboard End Seals

57-51-32-01 **787-8** TQA to TQF

Interval	Installed	Required	Procedure
N/A	6	See below	**(O) (MV)**

Any number may be missing.

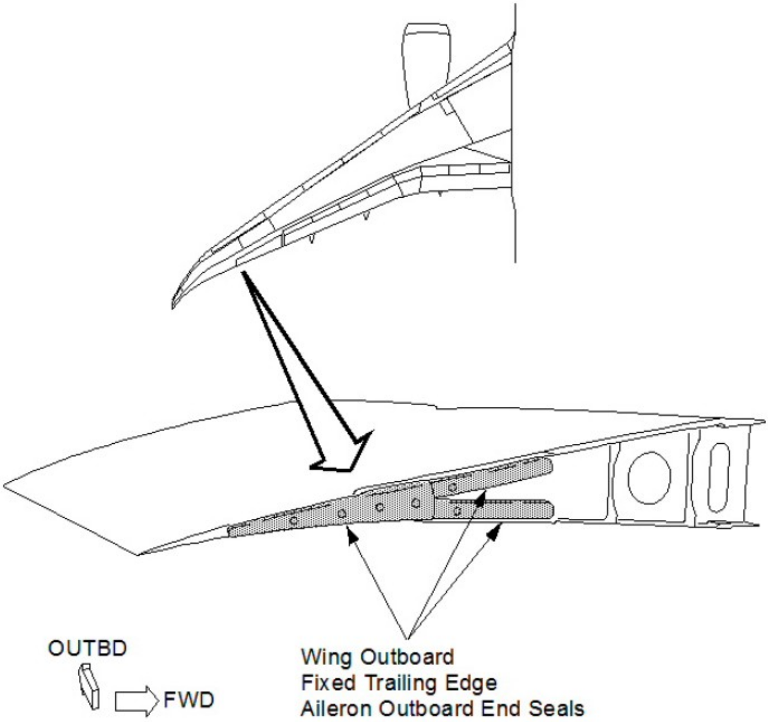
a. The total decrement per wing should not exceed the value provided in the table. Reduce performance limited weights for each missing seal by:

OPERATIONS (O)

Maximum Decrement Per Wing	Takeoff	Enroute Climb	Approach and Landing
726 kg	476 kg	272 kg	204 kg

--------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • ---------

LOCATION


OUTBD
FWD
Wing Outboard
Fixed Trailing Edge
Aileron Outboard End Seals

57-51-32 **Wing Outboard Fixed Trailing Edge Aileron Outboard End Seals**

57-51-32-02 **787-9** **TWA to TWB**

Interval	Installed	Required	Procedure
N/A	6	See below	**(O) (MV)**

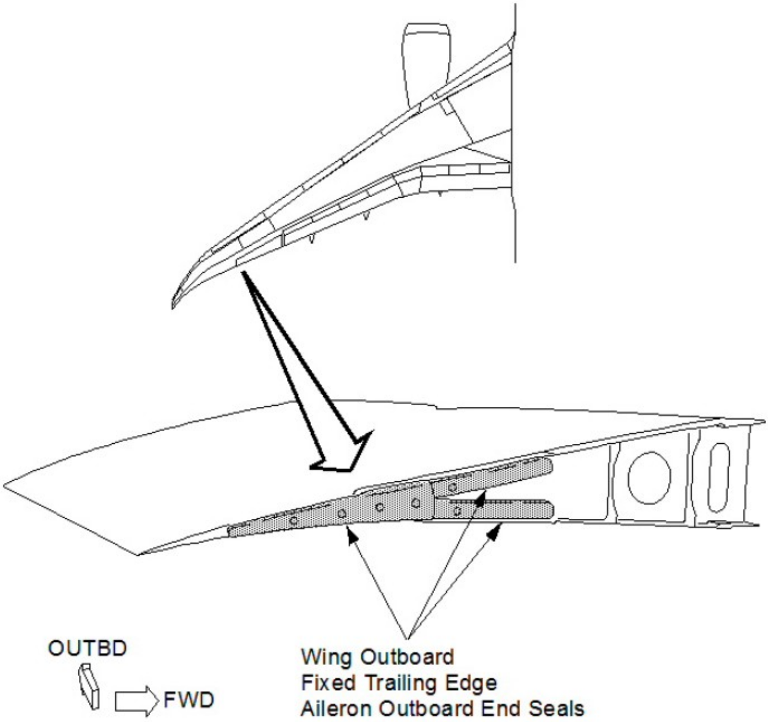
Any number may be missing.

a. The total decrement per wing should not exceed the value provided in the table. Reduce performance limited weights for each missing seal by:

OPERATIONS (O)

Maximum Decrement Per Wing	Takeoff	Enroute Climb	Approach and Landing
1,179 kg	726 kg	295 kg	204 kg

LOCATION


OUTBD
FWD
Wing Outboard
Fixed Trailing Edge
Aileron Outboard End Seals

57-51-33 Wing Outboard Fixed Trailing Edge Lower Aileron Spanwise Seals

57-51-33-01 **787-8** **TQA to TQF**

Interval	Installed	Required	Procedure
N/A	16	See below	**(O) (MV)**

One per wing may be missing.

a. Reduce performance limited weights for each missing seal by:

--------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • ---------

OPERATIONS (O)

TAKE-OFF

295 kg

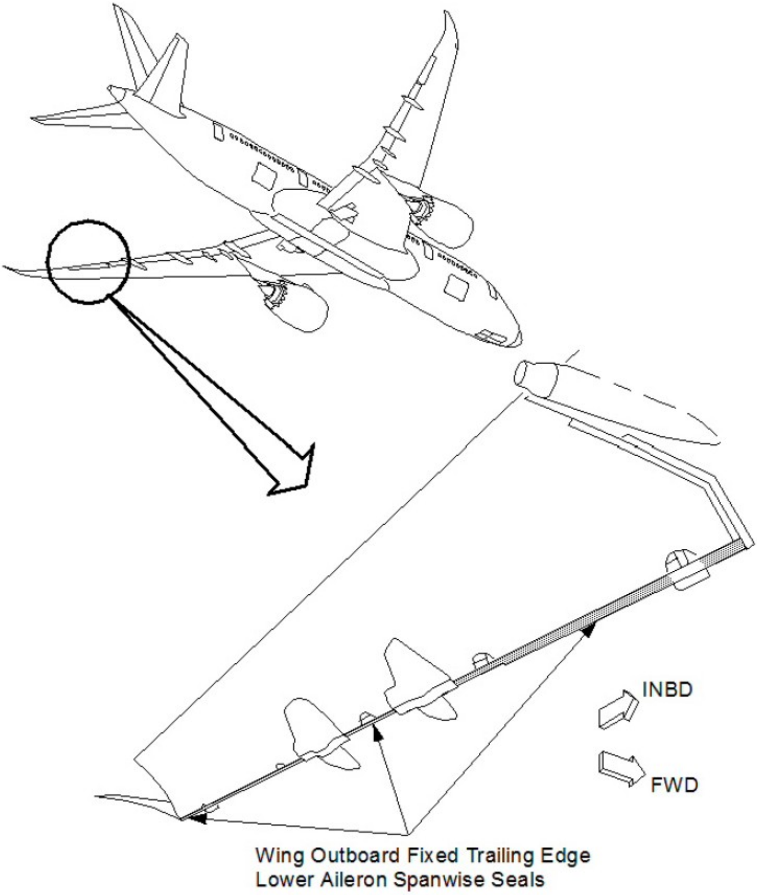
ENROUTE CLIMB

159 kg

APPROACH AND LANDING

136 kg

LOCATION


INBD
FWD
Wing Outboard Fixed Trailing Edge
Lower Aileron Spanwise Seals

57-51-33 **Wing Outboard Fixed Trailing Edge Lower Aileron Spanwise Seals**

57-51-33-02 **787-9** **TWA to TWB**

Interval	Installed	Required	Procedure
N/A	16	See below	**(O) (MV)**

One per wing may be missing.

a. Reduce performance limited weights for each missing seal by:

--------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • ---------

OPERATIONS (O)

TAKE-OFF

431 kg

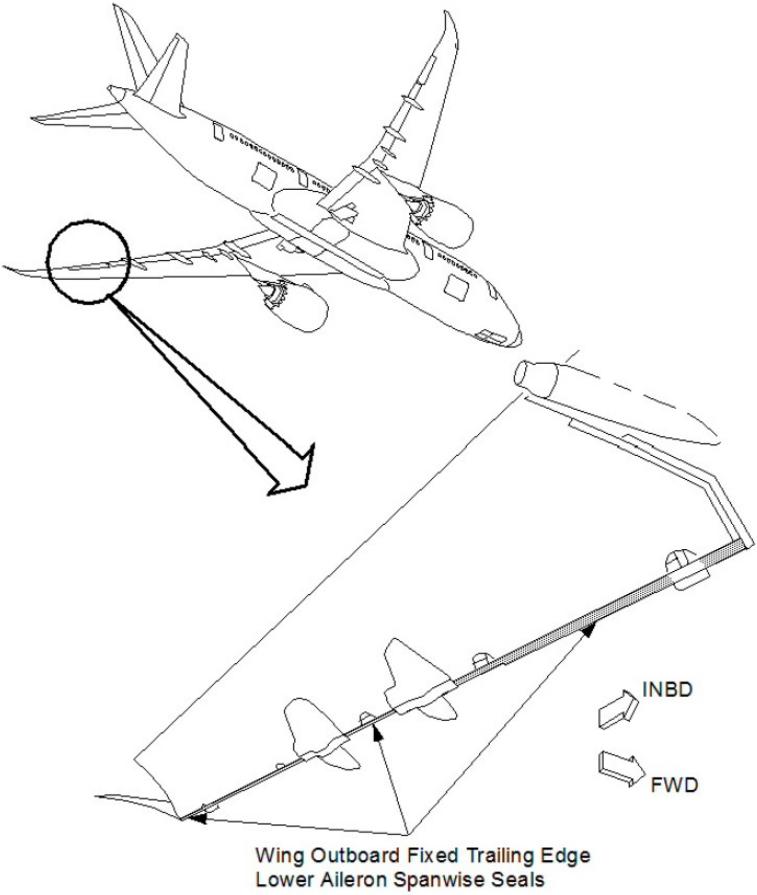
ENROUTE CLIMB

181 kg

APPROACH AND LANDING

136 kg

LOCATION


INBD
FWD
Wing Outboard Fixed Trailing Edge
Lower Aileron Spanwise Seals

57-51-34 Wing Outboard Fixed Trailing Edge Aileron Lower Lubrication Panels

57-51-34-01 **787-8** **TQA to TQF**

Interval	Installed	Required	Procedure
N/A	4	See below	**(O) (MV)**

Any number may be missing.

a. Reduce performance limited weights for each missing panel by:

--------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • ---------

OPERATIONS (O)

TAKE-OFF

295 kg

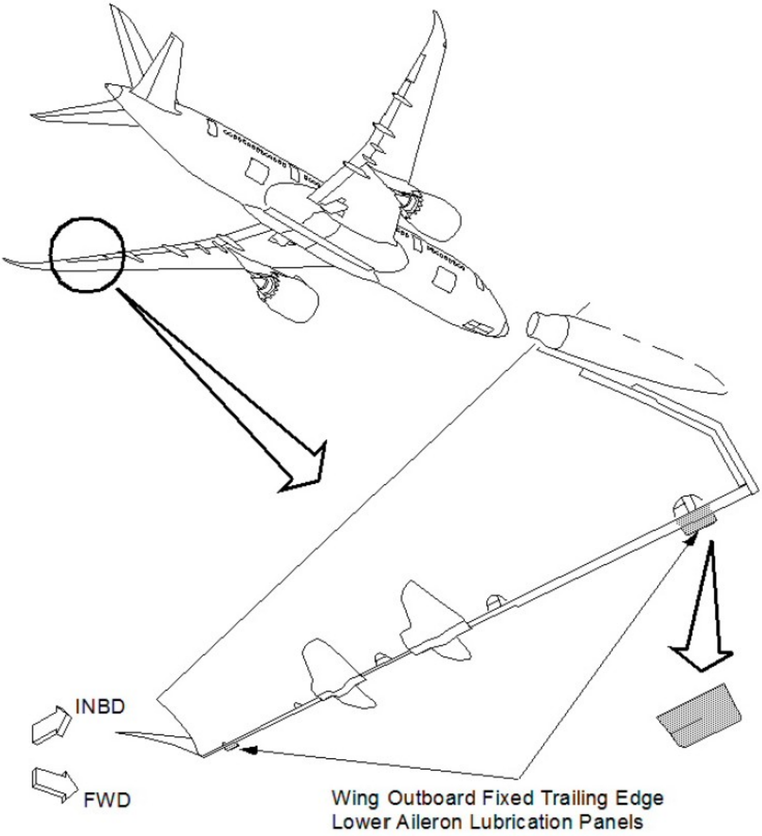
ENROUTE CLIMB

159 kg

APPROACH AND LANDING

136 kg

LOCATION


INBD
FWD
Wing Outboard Fixed Trailing Edge
Lower Aileron Lubrication Panels

57-51-34 Wing Outboard Fixed Trailing Edge Aileron Lower Lubrication Panels

57-51-34-02 **787-9** **TWA to TWB**

Interval	Installed	Required	Procedure
N/A	4	See below	**(O) (MV)**

Any number may be missing.

a. Reduce performance limited weights for each missing panel by:

--------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • ---------

OPERATIONS (O)

TAKE-OFF

431 kg

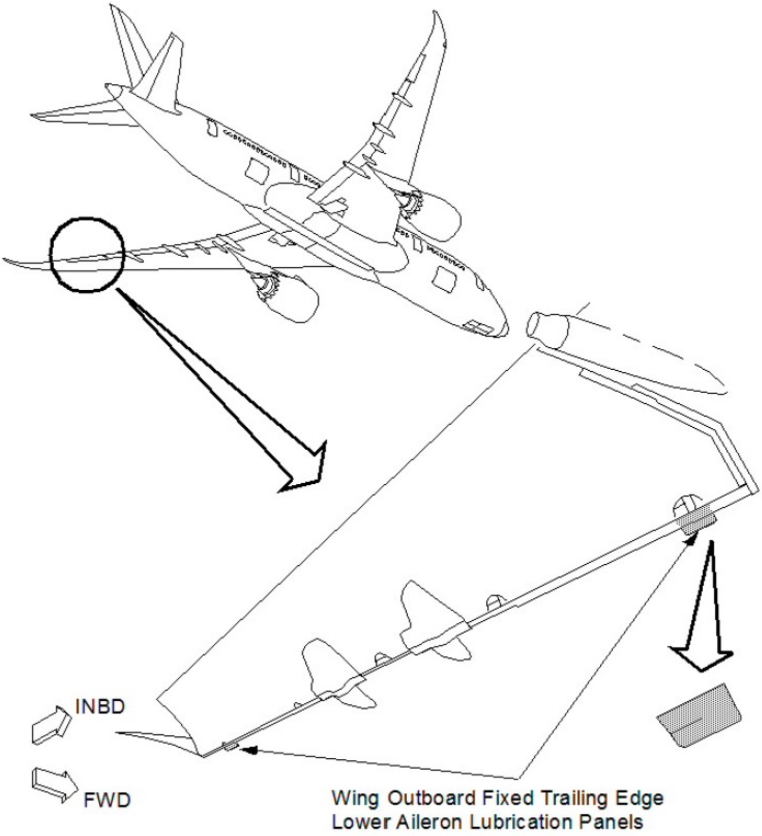
ENROUTE CLIMB

181 kg

APPROACH AND LANDING

136 kg

LOCATION


INBD
FWD
Wing Outboard Fixed Trailing Edge
Lower Aileron Lubrication Panels

57-51-35 Wing Outboard Fixed Trailing Edge Aileron Blister Fairing Seals

57-51-35-01 **787-8** **TQA to TQF**

Interval	Installed	Required	Procedure
N/A	12	See below	**(O) (MV)**

Any number may be missing.

a. For each aileron with one or more missing seals, reduce performance limited weights by:

--------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • ---------

OPERATIONS (O)

TAKE-OFF

318 kg/aileron

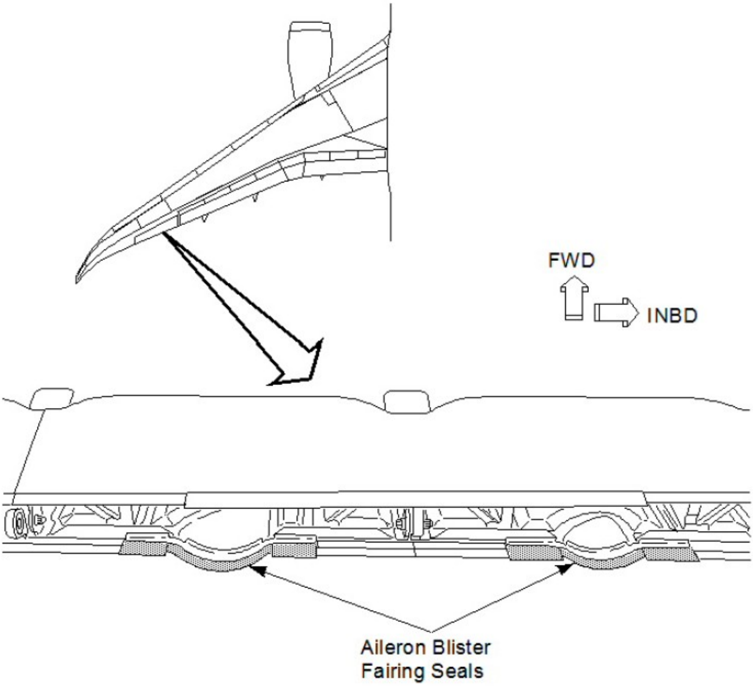
ENROUTE CLIMB

181 kg/aileron

APPROACH AND LANDING

136 kg/aileron

LOCATION


FWD
INBD
Aileron Blister Fairing Seals

UNCONTROLLED IF DOWNLOADED OR PRINTED

57-51-35 Wing Outboard Fixed Trailing Edge Aileron Blister Fairing Seals

57-51-35-02 **787-9** **TWA to TWB**

Interval	Installed	Required	Procedure
N/A	12	See below	**(O) (MV)**

Any number may be missing.

a. For each aileron with one or more missing seals, reduce performance limited weights by:

--------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • ---------

OPERATIONS (O)

TAKE-OFF

453 kg/aileron

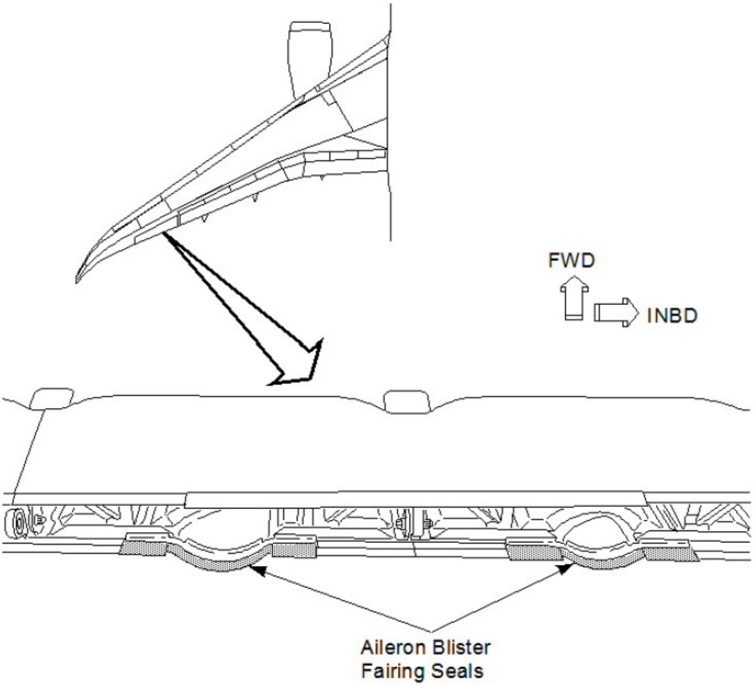
ENROUTE CLIMB

181 kg/aileron

APPROACH AND LANDING

136 kg/aileron

LOCATION


FWD
INBD
Aileron Blister
Fairing Seals

57-53-01 Inboard Flap Fillet Fairing Access Panels

Interval	Installed	Required	Procedure
N/A	4	See below	**N/A**

Any number may be missing.

a. Reduce performance limited weights by:

--------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • ---------

OPERATIONS (O)

TAKE-OFF

Negligible

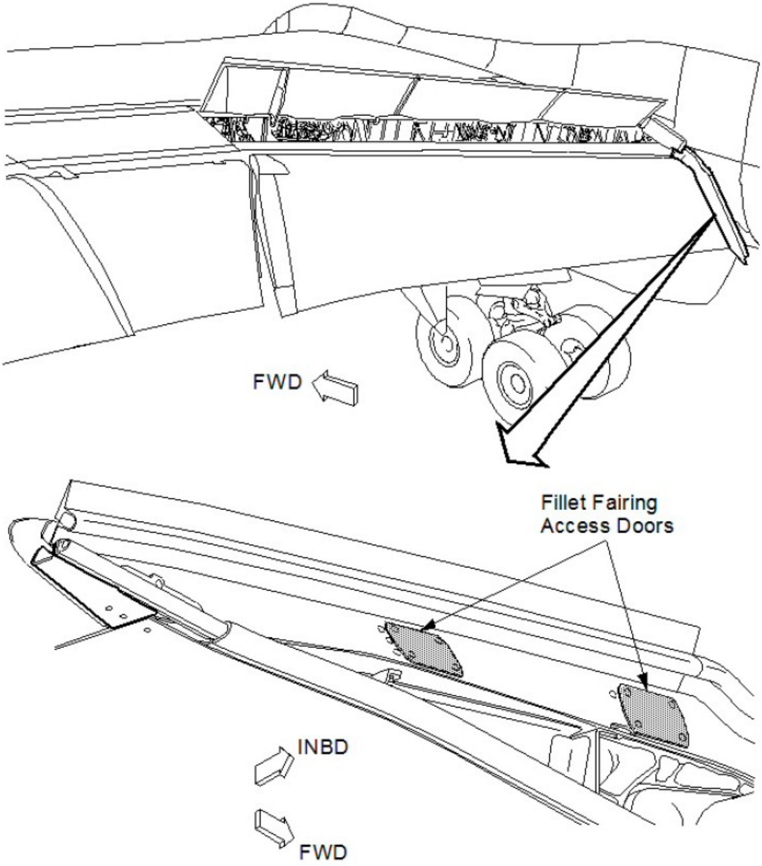
ENROUTE CLIMB

No decrement

APPROACH AND LANDING

Negligible

LOCATION


FWD
Fillet Fairing
Access Doors
INBD
FWD

57-53-02 Inboard Flap Lower Seal at Side of Body

57-53-02-01 787-8

TQA to TQF

Interval	Installed	Required	Procedure
N/A	6	See below	**(O) (MV)**

Any number may be missing.

a. For each wing with one or more missing seals, reduce performance limited weights by:

--------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • ---------

OPERATIONS (O)

TAKE-OFF

91 kg

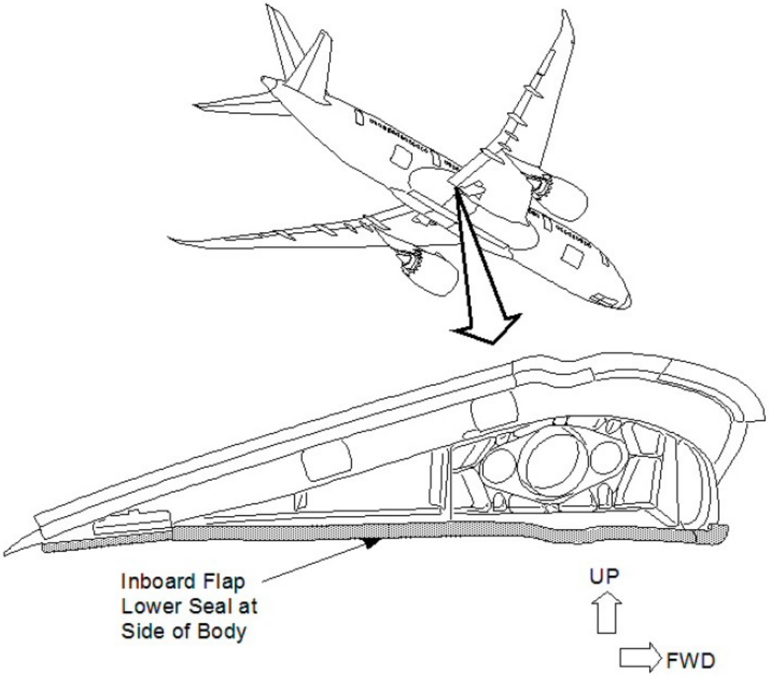
ENROUTE CLIMB

91 kg

APPROACH AND LANDING

No decrement

LOCATION


Inboard Flap
Lower Seal at
Side of Body
UP
FWD

57-53-02 **Inboard Flap Lower Seal at Side of Body**

57-53-02-02 **787-9** **TWA to TWB**

Interval	Installed	Required	Procedure
N/A	6	See below	**(O) (MV)**

Any number may be missing.

a. For each wing with one or more missing seals, reduce performance limited weights by:

--------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • ---------

OPERATIONS (O)

TAKE-OFF

113 kg

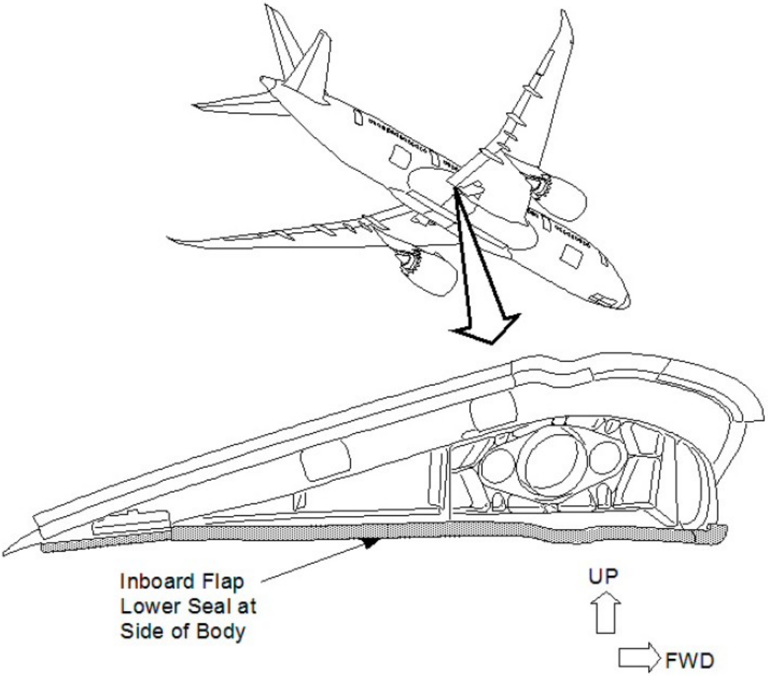
ENROUTE CLIMB

91 kg

APPROACH AND LANDING

No decrement

LOCATION


Inboard Flap
Lower Seal at
Side of Body
UP
FWD

UNCONTROLLED IF DOWNLOADED OR PRINTED

57-53-11 Outboard Flap Support Number 1, 2, 7 and 8 Aft Fairing Seals

57-53-11-01 **787-8** **TQA to TQF**

Interval	Installed	Required	Procedure
N/A	16	See below	**(O) (MV)**

Up to four seals per wing may be missing.

a. The total decrement per fairing should not exceed the value provided in the OPERATION (O).
b. The maximum decrement required for takeoff and enroute climb for each fairing is 590 kg for any total length of missing seals on each fairing.
c. Reduce performance limited weights for each foot of missing seal by:

--------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • ---------

OPERATIONS (O)

TAKE-OFF

227 kg

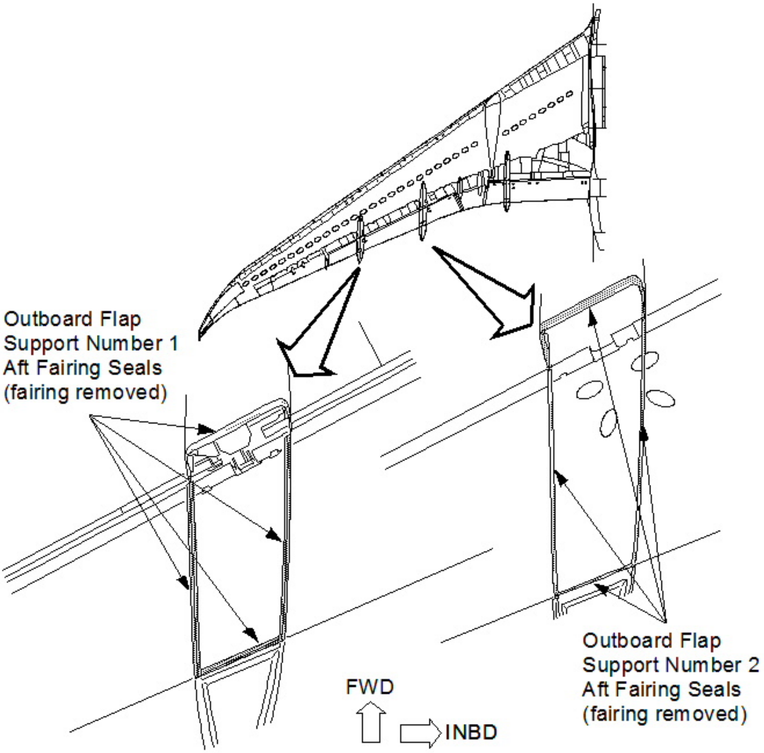
ENROUTE CLIMB

227 kg

APPROACH AND LANDING

23 kg

LOCATION


Outboard Flap
Support Number 1
Aft Fairing Seals
(fairing removed)
Outboard Flap
Support Number 2
Aft Fairing Seals
(fairing removed)
FWD
INBD

57-53-11 Outboard Flap Support Number 1, 2, 7 and 8 Aft Fairing Seals

57-53-11-02 **787-9** **TWA to TWB**

Interval	Installed	Required	Procedure
N/A	16	See below	**(O) (MV)**

Up to four seals per wing may be missing.

a. The total decrement per fairing should not exceed the value provided in the OPERATION (O).

b. The maximum decrement required for takeoff and enroute climb for each fairing is 794 kg for any total length of missing seals on each fairing.

c. Reduce performance limited weights for each foot of missing seal by:

OPERATIONS (O)

TAKE-OFF

318 kg

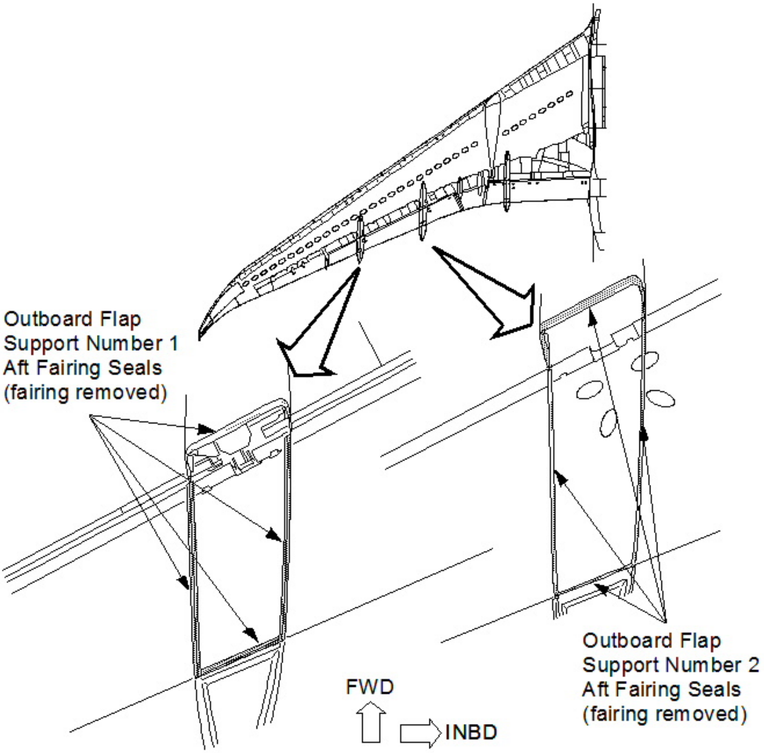
ENROUTE CLIMB

249 kg

APPROACH AND LANDING

23 kg

LOCATION


Outboard Flap
Support Number 1
Aft Fairing Seals
(fairing removed)
Outboard Flap
Support Number 2
Aft Fairing Seals
(fairing removed)
FWD
INBD

57-53-12 Outboard Flap Support Number 1, 2, 7 and 8 Aft Fairing

57-53-12-01 **787-8** **TQA to TQF**

Interval	Installed	Required	Procedure
N/A	4	See below	**(O) (MV)**

One may be missing.
a. Reduce performance limited weights by:

--------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • ---------

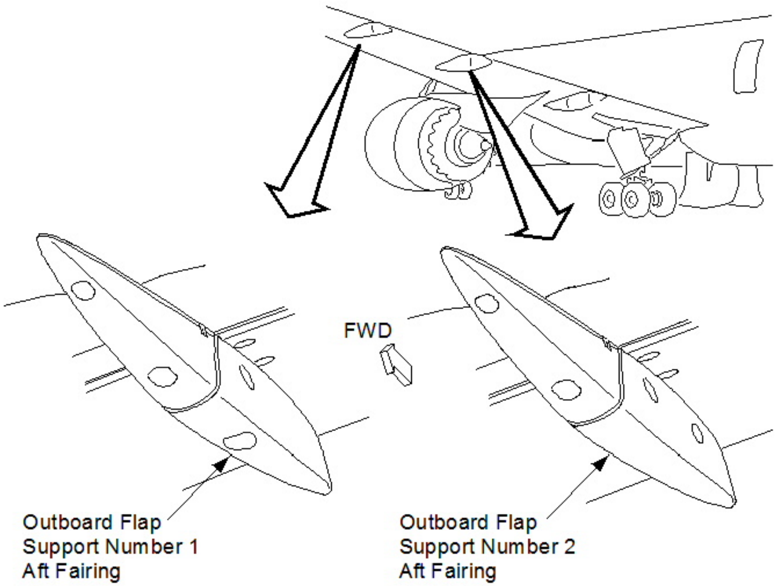
OPERATIONS (O)

TAKE-OFF
1,451 kg

ENROUTE CLIMB
975 kg

APPROACH AND LANDING
590 kg

LOCATION


FWD
Outboard Flap
Support Number 1
Aft Fairing
Outboard Flap
Support Number 2
Aft Fairing

57-53-12 Outboard Flap Support Number 1, 2, 7 and 8 Aft Fairing

57-53-12-02 **787-9** **TWA to TWB**

Interval	Installed	Required	Procedure
N/A	4	See below	**(O) (MV)**

One may be missing.

a. Reduce performance limited weights by:

OPERATIONS (O)

TAKE-OFF

2,132 kg

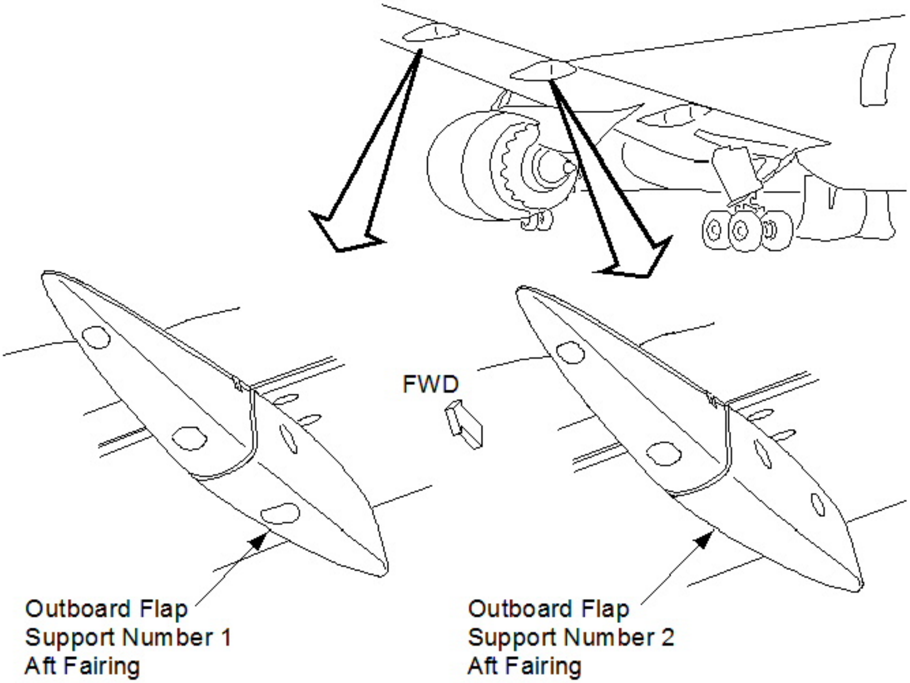
ENROUTE CLIMB

998 kg

APPROACH AND LANDING

590 kg

LOCATION


FWD
Outboard Flap Support Number 1 Aft Fairing
Outboard Flap Support Number 2 Aft Fairing

57-53-13 Outboard Flap Support Number 2 and 7 Aft Fairing Doors

57-53-13-01 **787-8** **TQA to TQF**

Interval	Installed	Required	Procedure
N/A	8	See below	**(O) (MV)**

Any number may be missing.

a. For each fairing with one or more missing doors, reduce performance limited weights by:

--------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • ---------

OPERATIONS (O)

TAKE-OFF

544 kg

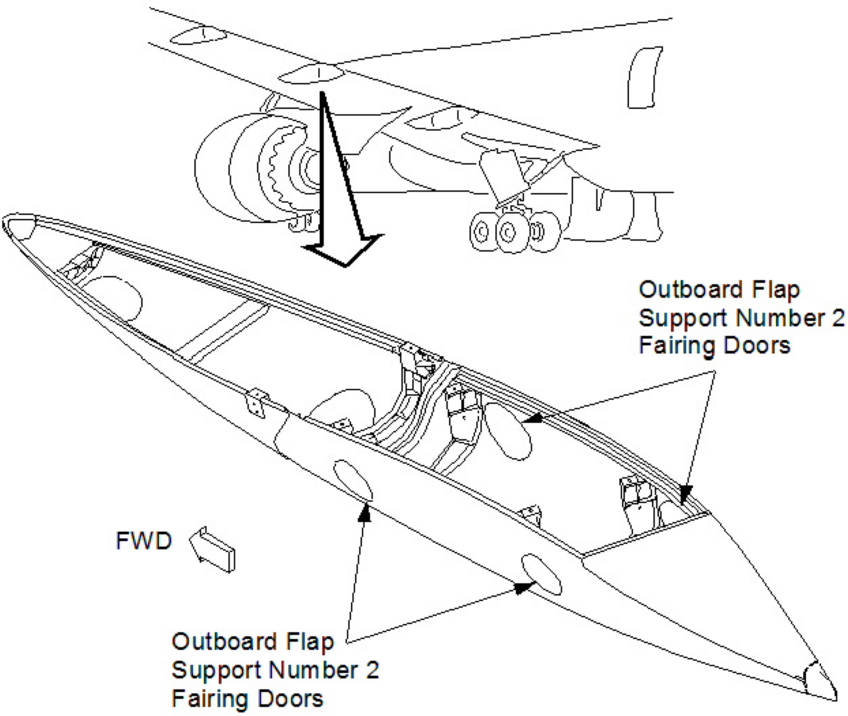
ENROUTE CLIMB

590 kg

APPROACH AND LANDING

23 kg

LOCATION


Outboard Flap Support Number 2 Fairing Doors
FWD
Outboard Flap Support Number 2 Fairing Doors

57-53-13 Outboard Flap Support Number 2 and 7 Aft Fairing Doors

57-53-13-02 **787-9**

TWA to TWB

Interval	Installed	Required	Procedure
N/A	8	See below	**(O) (MV)**

Any number may be missing.

a. For each fairing with one or more missing doors, reduce performance limited weights by:

--------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • ---------

OPERATIONS (O)

TAKE-OFF

794 kg

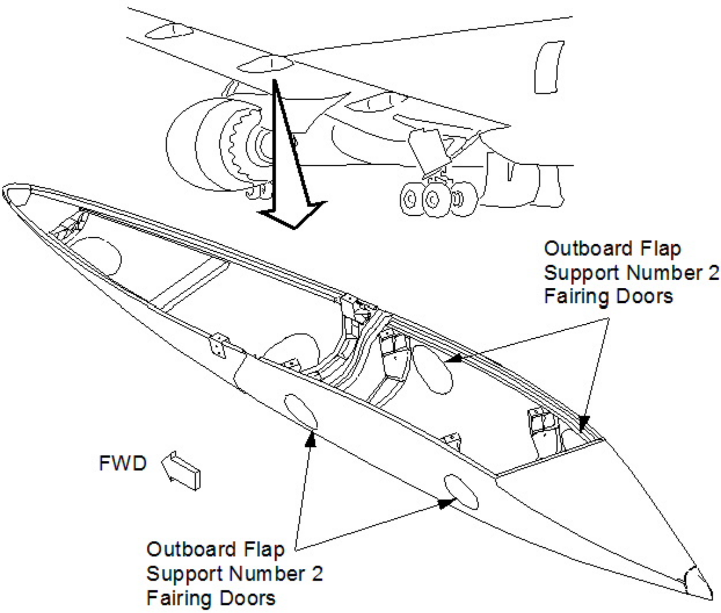
ENROUTE CLIMB

612 kg

APPROACH AND LANDING

23 kg

LOCATION


Outboard Flap Support Number 2 Fairing Doors
FWD
Outboard Flap Support Number 2 Fairing Doors

57-53-14 Outboard Flap Outboard End Seals

57-53-14-01 **787-8** **TQA to TQF**

Interval	Installed	Required	Procedure
N/A	4	See below	**(O) (MV)**

Any number may be missing.

a. For each wing with one or more missing seals, reduce performance limited weights by:

--------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • ---------

OPERATIONS (O)

TAKE-OFF

249 kg

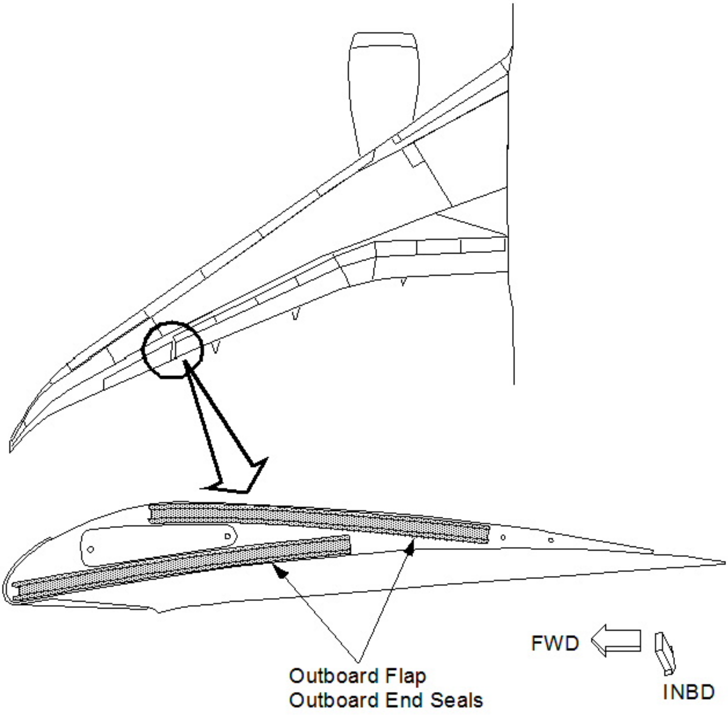
ENROUTE CLIMB

272 kg

APPROACH AND LANDING

No decrement

LOCATION


Outboard Flap
Outboard End Seals
FWD
INBD

57-53-14 Outboard Flap Outboard End Seals

57-53-14-02 **787-9**

TWA to TWB

Interval	Installed	Required	Procedure
N/A	4	See below	**(O) (MV)**

Any number may be missing.

a. For each wing with one or more missing seals, reduce performance limited weights by:

OPERATIONS (O)

TAKE-OFF

363 kg

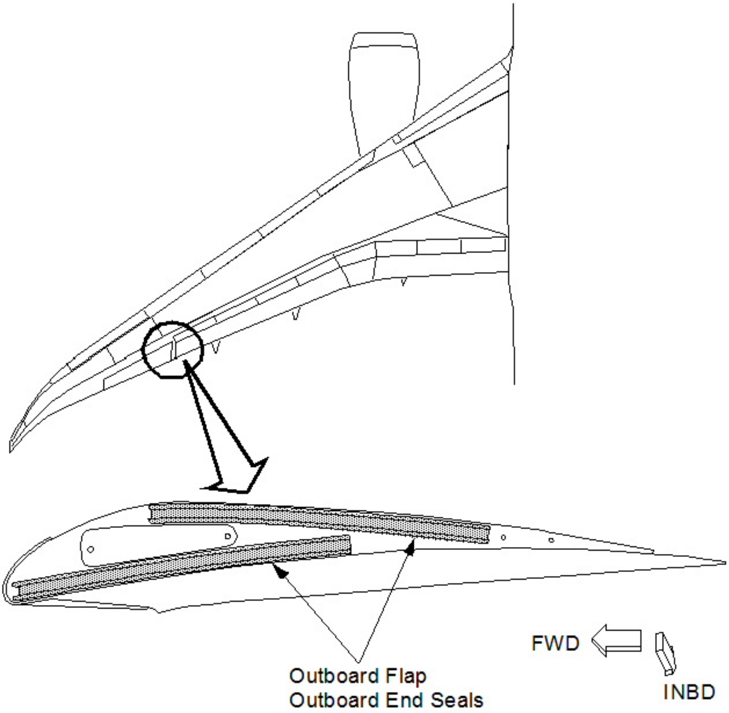
ENROUTE CLIMB

272 kg

APPROACH AND LANDING

No decrement

LOCATION


Outboard Flap
Outboard End Seals
FWD
INBD

57-60-01 Aileron Inboard Forward Blister Fairing

57-60-01-01 **787-8** **TQA to TQF**

Interval	Installed	Required	Procedure
N/A	2	See below	**(O) (MV)**

Any number may be missing provided.

a. The corresponding aileron inboard aft blister fairing is also removed.
b. Reduce performance limited weights for each missing fairing by:

--------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • ---------

OPERATIONS (O)

TAKE-OFF

363 kg

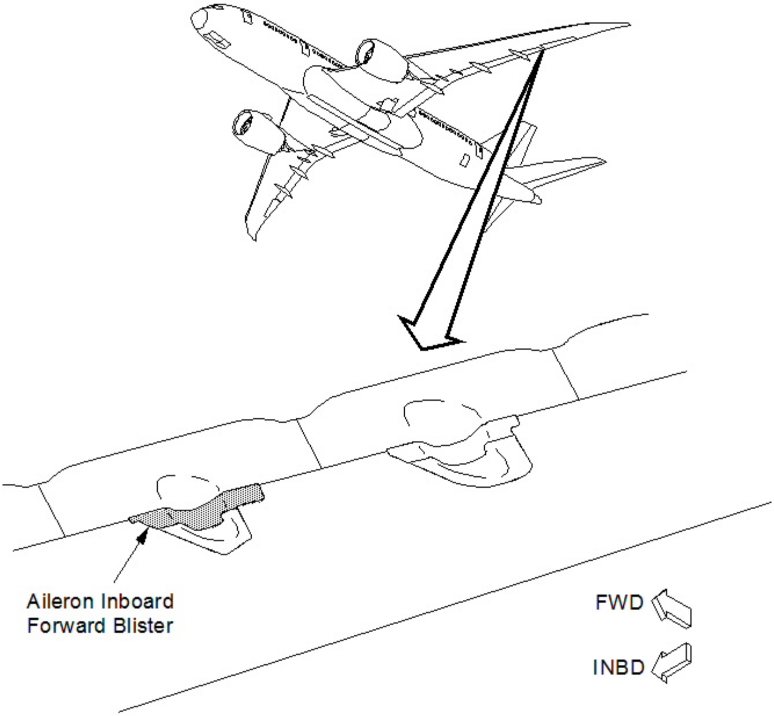
ENROUTE CLIMB

204 kg

APPROACH AND LANDING

159 kg

LOCATION


Aileron Inboard
Forward Blister
FWD
INBD

57-60-01 Aileron Inboard Forward Blister Fairing

57-60-01-02 **787-9** **TWA to TWB**

Interval	Installed	Required	Procedure
N/A	2	See below	**(O) (MV)**

Any number may be missing provided.

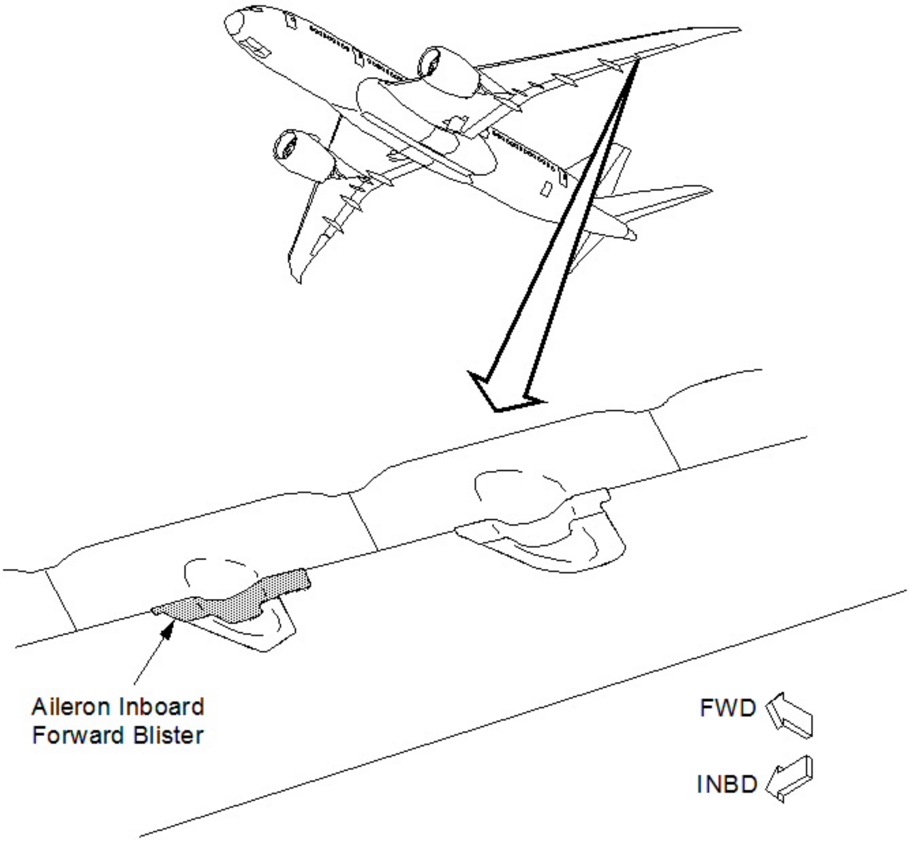
a. The corresponding aileron inboard aft blister fairing is also removed.
b. Reduce performance limited weights for each missing fairing by:

--------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • ---------

OPERATIONS (O)

TAKE-OFF
522 kg
ENROUTE CLIMB
204 kg
APPROACH AND LANDING
159 kg

LOCATION


Aileron Inboard
Forward Blister
FWD
INBD

57-60-02 Aileron Inboard Aft Blister Fairing

57-60-02-01 **787-8** **TQA to TQF**

Interval	Installed	Required	Procedure
N/A	2	See below	**(O) (MV)**

Any number may be missing.

a. When the forward and corresponding aileron inboard aft blister fairings are both missing, use aileron inboard forward blister fairing performance decrements.

b. Reduce performance limited weights for any number of missing fairings by:

--------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • ---------

OPERATIONS (O)

TAKE-OFF

113 kg

ENROUTE CLIMB

68 kg

APPROACH AND LANDING

Negligible

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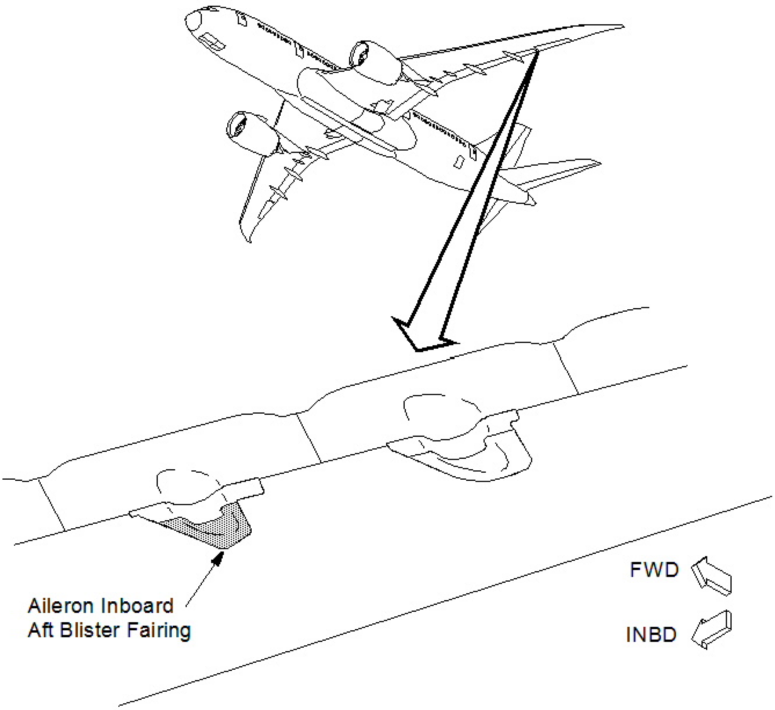
LOCATION


Aileron Inboard
Aft Blister Fairing
FWD
INBD

57-60-02 **Aileron Inboard Aft Blister Fairing**

57-60-02-02 **787-9** **TWA to TWB**

Interval	Installed	Required	Procedure
N/A	2	See below	**(O) (MV)**

Any number may be missing.

a. When the forward and corresponding aileron inboard aft blister fairings are both missing, use aileron inboard forward blister fairing performance decrements.
b. Reduce performance limited weights for any number of missing fairings by

---

OPERATIONS (O)

TAKE-OFF

159 kg

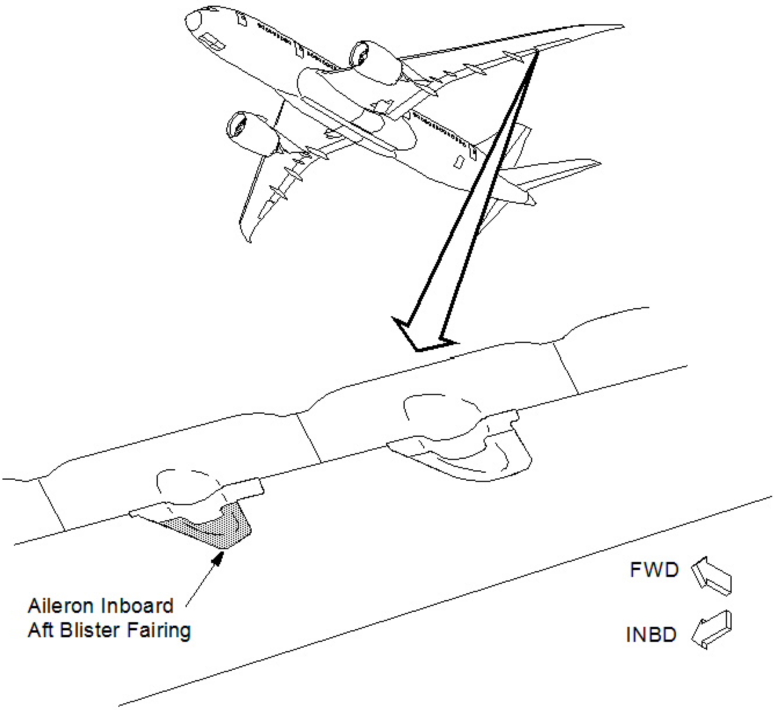
ENROUTE CLIMB

68 kg

APPROACH AND LANDING

Negligible

LOCATION


Aileron Inboard
Aft Blister Fairing
FWD
INBD

57-60-03 Aileron Outboard Forward Blister Fairing

57-60-03-01 **787-8** **TQA to TQF**

Interval	Installed	Required	Procedure
N/A	2	See below	**(O) (MV)**

Any number may be missing provided.

a. The corresponding aileron outboard aft blister fairing is also removed.
b. Reduce performance limited weights for each missing fairing by:

--------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • ---------

OPERATIONS (O)

TAKE-OFF

431 kg

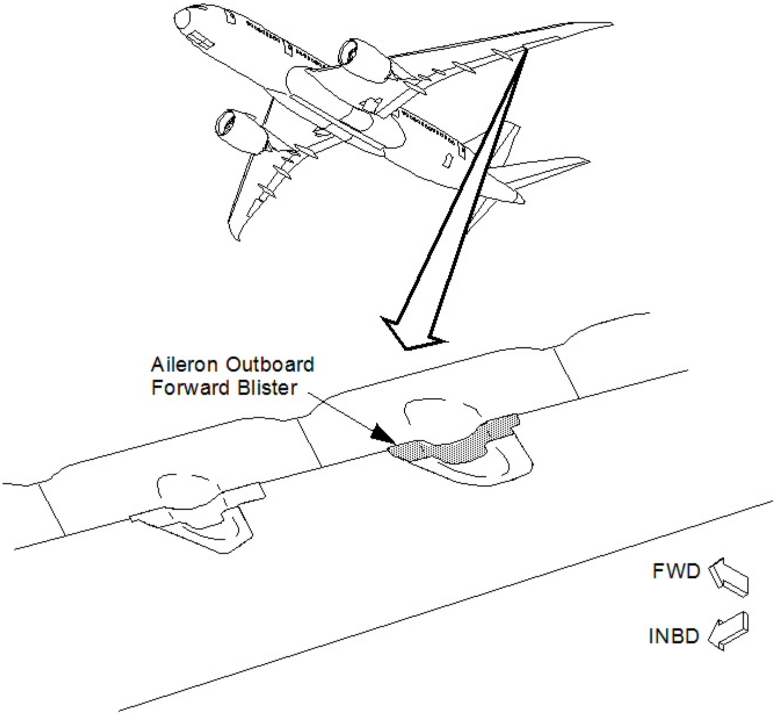
ENROUTE CLIMB

249 kg

APPROACH AND LANDING

181 kg

LOCATION


Aileron Outboard
Forward Blister
FWD
INBD

57-60-03 **Aileron Outboard Forward Blister Fairing**

57-60-03-02 **787-9** **TWA to TWB**

Interval	Installed	Required	Procedure
N/A	2	See below	**(O) (MV)**

Any number may be missing provided.

a. The corresponding aileron outboard aft blister fairing is also removed.
b. Reduce performance limited weights for each missing fairing by:

--------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • ---------

OPERATIONS (O)

TAKE-OFF

635 kg

ENROUTE CLIMB

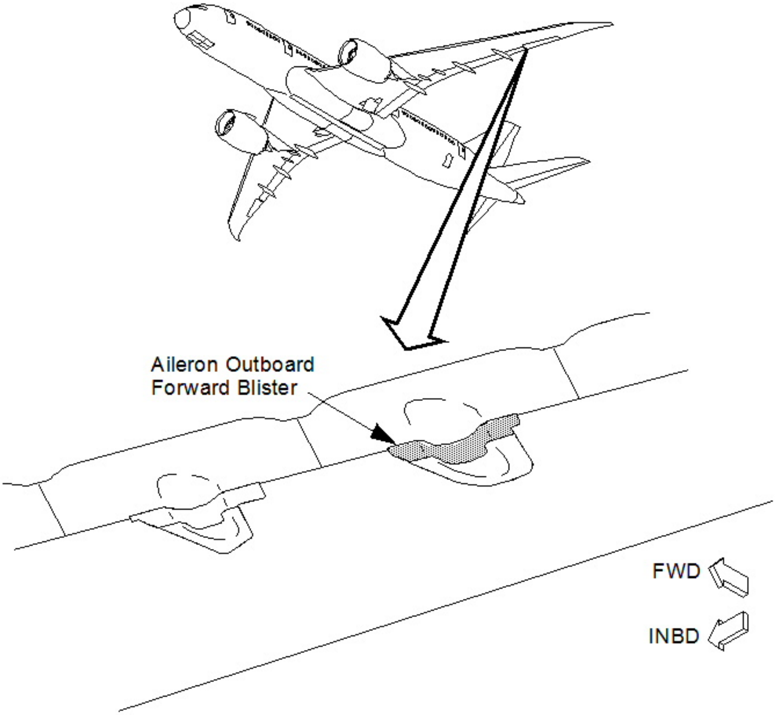
249 kg

APPROACH AND LANDING

181 kg

Note: Performance adjustments for CDL Item 57-60-04 (aileron outboard aft blister fairing) missing are not required.

LOCATION


Aileron Outboard
Forward Blister
FWD
INBD

57-60-04 Aileron Outboard Aft Blister Fairing

57-60-04-01 **787-8** **TQA to TQF**

Interval	Installed	Required	Procedure
N/A	2	See below	**(O) (MV)**

Any number may be missing.

a. When the forward and corresponding aileron outboard aft blister fairings are both missing, use aileron outboard forward blister fairing performance decrements.

b. Reduce performance limited weights for each missing fairing by:

--------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • ---------

OPERATIONS (O)

TAKE-OFF

204 kg

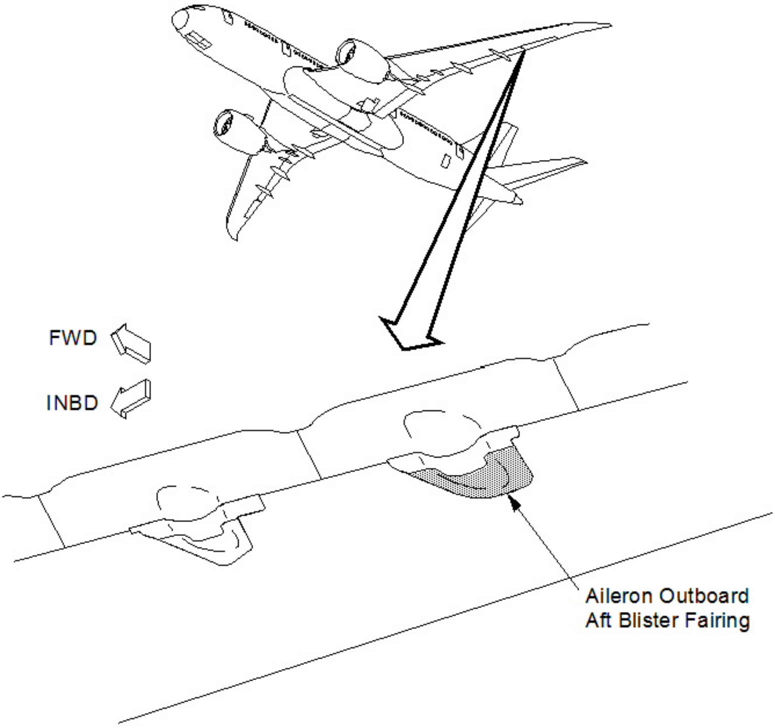
ENROUTE CLIMB

113 kg

APPROACH AND LANDING

91 kg

LOCATION


FWD
INBD
Aileron Outboard
Aft Blister Fairing

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57-60-04 Aileron Outboard Aft Blister Fairing

57-60-04-02 **787-9** **TWA to TWB**

Interval	Installed	Required	Procedure
N/A	2	See below	**(O) (MV)**

Any number may be missing.

a. When the forward and corresponding aileron outboard aft blister fairings are both missing, use aileron outboard forward blister fairing performance decrements.

b. Reduce performance limited weights for each missing fairing by:

--------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • ---------

OPERATIONS (O)

TAKE-OFF

295 kg

ENROUTE CLIMB

113 kg

APPROACH AND LANDING

91 kg

LOCATION

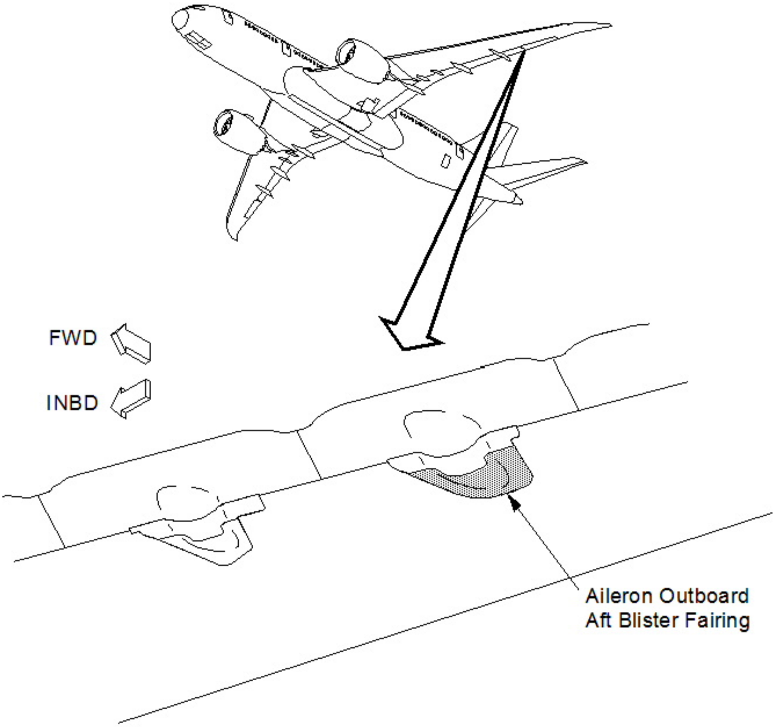
FWD
INBD
Aileron Outboard
Aft Blister Fairing

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Table of Contents

ATA 71 **POWER PLANT** . . . . . . **ATA 71-1**
Table Of Contents . . . . . . **ATA 71-1**
71-11-01 **Fan Cowl Hoist Plugs** . . . . . . **ATA 71-2**

71-11-01 Fan Cowl Hoist Plugs

Interval	Installed	Required	Procedure
N/A	12	See below	**N/A**

Any number may be missing.

a. Reduce performance limited weights for any number missing by:

--------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • ---------

OPERATIONS (O)

TAKE-OFF

Negligible

ENROUTE CLIMB

Negligible

APPROACH AND LANDING

Negligible

LOCATION

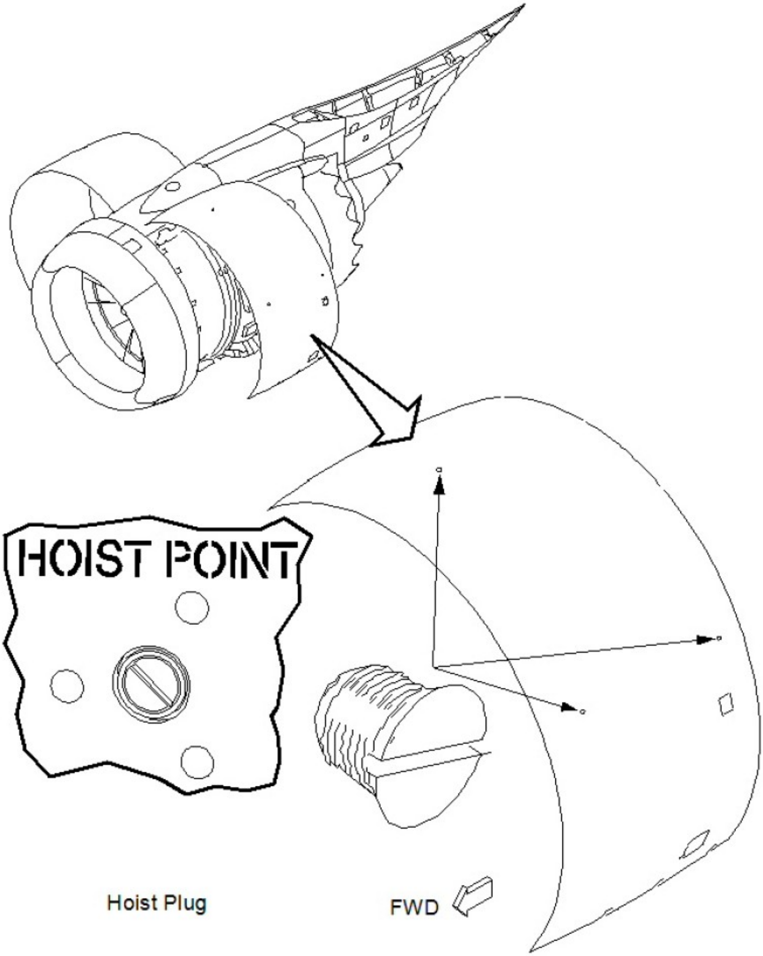

HOIST POINT
Hoist Plug
FWD

Table of Contents

ATA 78 **ENGINE EXHAUST** . . . . ATA 78-1
Table Of Contents . . . . ATA 78-1
78-31-01 **Thrust Reverser Blocker Doors** . . . . ATA 78-2
78-31-01-01 **787-8** . . . . ATA 78-2
78-31-01-02 **787-9** . . . . ATA 78-4
78-31-02 **Thrust Reverser Blocker Door Wedge Fairing** . . . . ATA 78-6
78-31-02-01 **787-8** . . . . ATA 78-6
78-31-02-02 **787-9** . . . . ATA 78-8
78-31-03 **Thrust Reverser Cascade Segments** . . . . ATA 78-10
78-31-04 **Thrust Reverser Blocker Door Hinge Covers** . . . . ATA 78-12
78-31-04-01 **787-8** . . . . ATA 78-12
78-31-04-02 **787-9** . . . . ATA 78-14

78-31-01 Thrust Reverser Blocker Doors

78-31-01-01 787-8

TQA to TQF

Interval	Installed	Required	Procedure
N/A	24	See below	**(O) (MV)**

Up to twelve may be missing.

a. For any missing door the thrust reverser must be considered inoperative.

Note: The airplane must be dispatched using MEL Item 78-31-01.

b. Adjust takeoff performance for thrust reverser inoperative. In addition, reduce the performance limited weights for each missing blocker door by:

--------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • ---------

OPERATIONS (O)

TAKE-OFF

1,497 kg

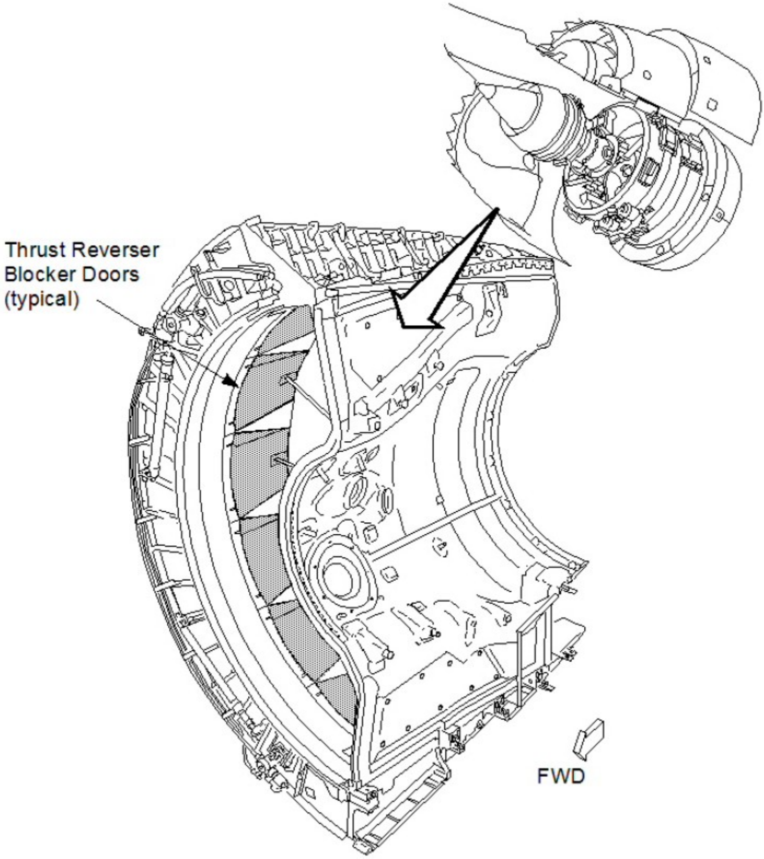
ENROUTE CLIMB

862 kg

APPROACH AND LANDING

1,021 kg

LOCATION


Thrust Reverser Blocker Doors (typical)
FWD

78-31-01 **Thrust Reverser Blocker Doors**

78-31-01-02 **787-9** **TWA to TWB**

Interval	Installed	Required	Procedure
N/A	24	See below	**(O) (MV)**

Up to twelve may be missing.

a. For any missing door the thrust reverser must be considered inoperative.

Note: The airplane must be dispatched using MEL Item 78-31-01.

b. Adjust takeoff performance for thrust reverser inoperative. In addition, reduce the performance limited weights for each missing blocker door by:

OPERATIONS (O)

TAKE-OFF

1,973 kg

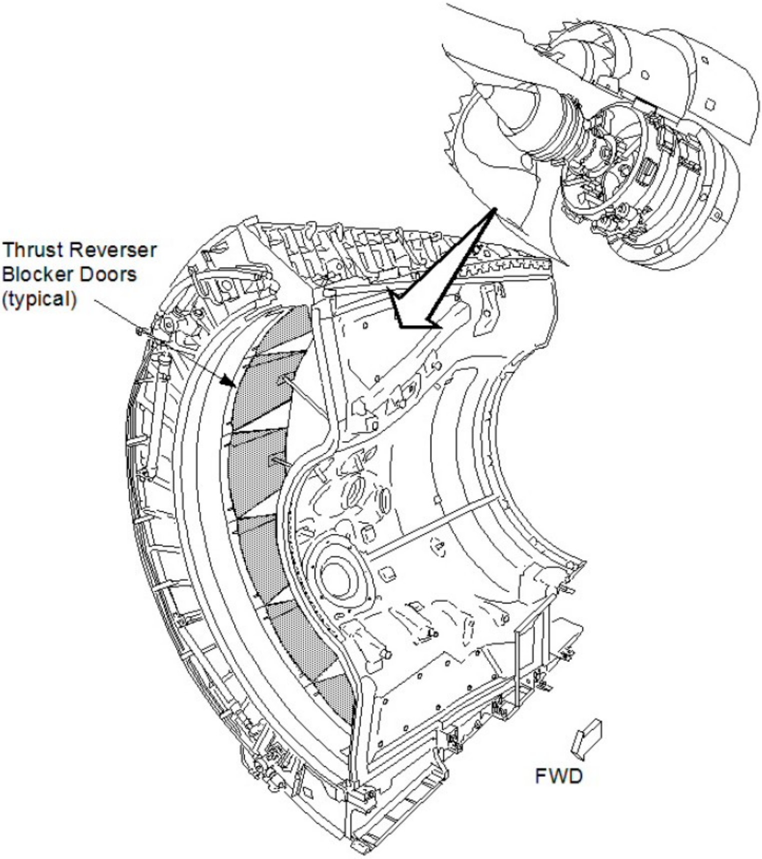
ENROUTE CLIMB

885 kg

APPROACH AND LANDING

1,021 kg

LOCATION


Thrust Reverser
Blocker Doors
(typical)
FWD

78-31-02 Thrust Reverser Blocker Door Wedge Fairing

78-31-02-01 **787-8** **TQA to TQF**

Interval	Installed	Required	Procedure
N/A	20	See below	**(O) (MV)**

Any number may be missing.

a. Reduce performance limited weights for each missing fairing by:

------- • ------- • ------- • ------- • ------- • ------- • ------- • ------- • ------- • ------- • ------- • ------- • ------- • ------- • ------- • ------- • ------- • ------- • -------

OPERATIONS (O)

TAKE-OFF

204 kg

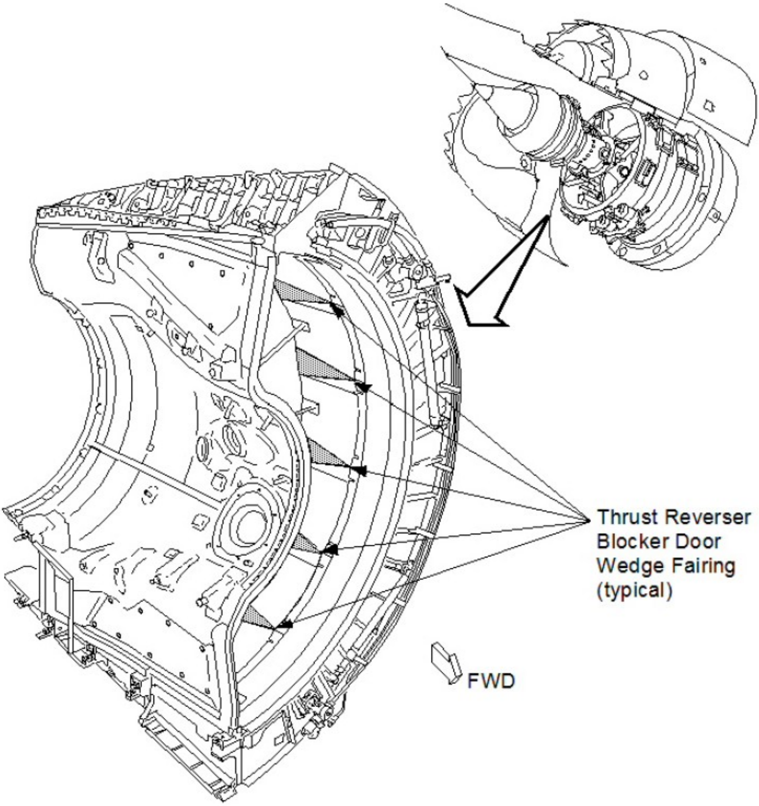
ENROUTE CLIMB

113 kg

APPROACH AND LANDING

136 kg

LOCATION


Thrust Reverser Blocker Door Wedge Fairing (typical)
FWD

78-31-02 **Thrust Reverser Blocker Door Wedge Fairing**

78-31-02-02 **787-9** **TWA to TWB**

Interval	Installed	Required	Procedure
N/A	20	See below	**(O) (MV)**

Any number may be missing.

a. Reduce performance limited weights for each missing fairing by:

--------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • ---------

OPERATIONS (O)

TAKE-OFF

249 kg

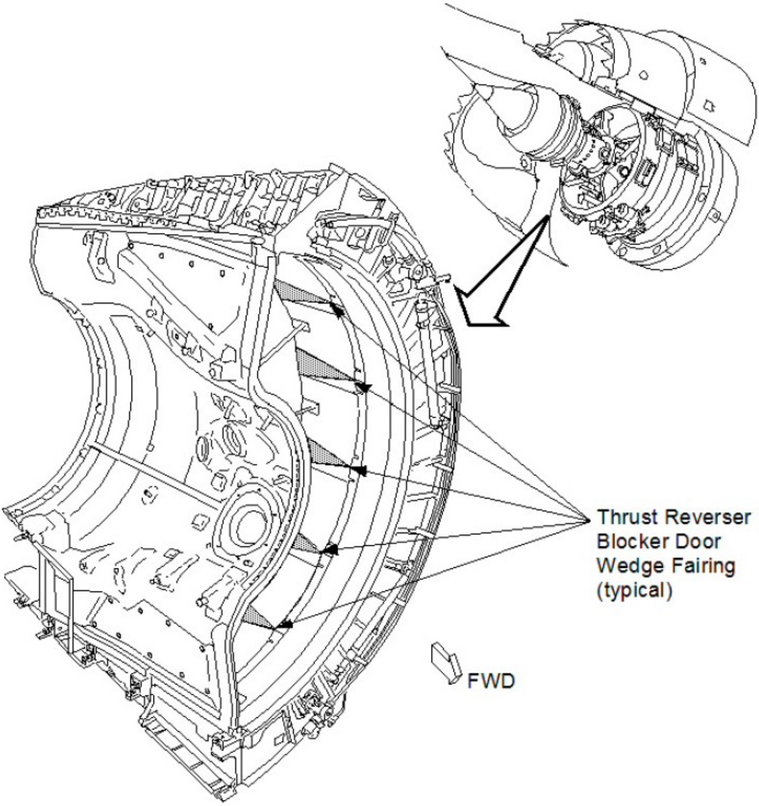
ENROUTE CLIMB

113 kg

APPROACH AND LANDING

136 kg

LOCATION


Thrust Reverser
Blocker Door
Wedge Fairing
(typical)
FWD

78-31-03 Thrust Reverser Cascade Segments

Interval	Installed	Required	Procedure
N/A	32	See below	**N/A**

Up to six for one engine may be missing provided:

a. No two adjacent cascade segments are missing.
b. The upper-most and lower-most cascade segments may not be missing.
c. The thrust reverser is deactivated and considered inoperative.
   Note: The airplane must be dispatched using MEL Item 78-31-01.
d. Reduce performance limited weights by:

--------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • ---------

OPERATIONS (O)

TAKE-OFF

No decrement

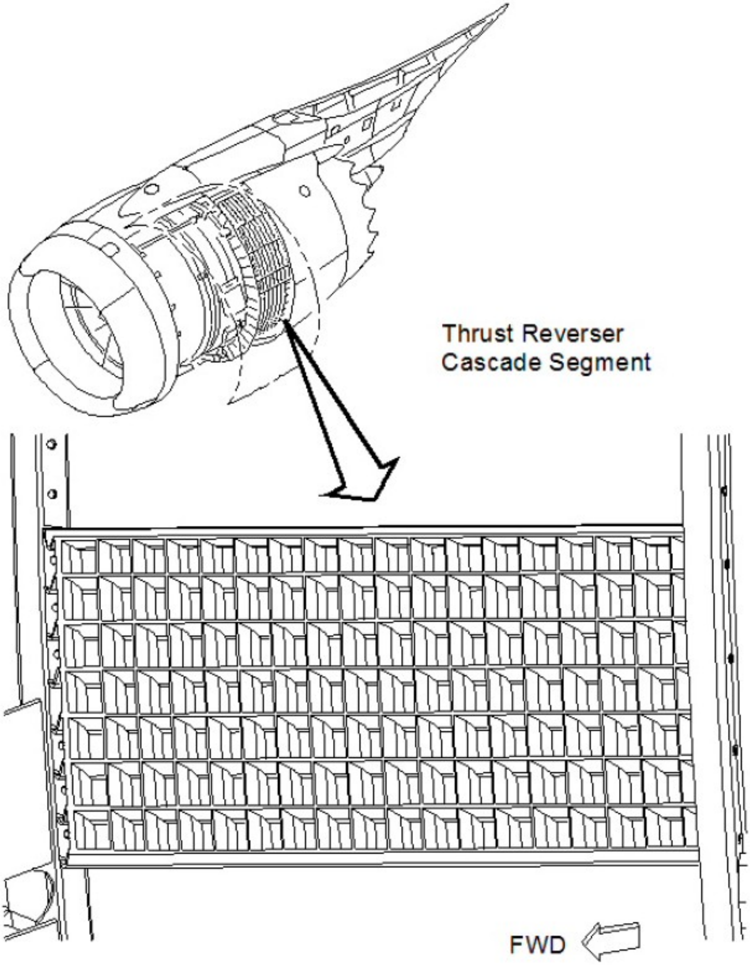
ENROUTE CLIMB

No decrement

APPROACH AND LANDING

No decrement

LOCATION


Thrust Reverser
Cascade Segment
FWD

78-31-04 Thrust Reverser Blocker Door Hinge Covers

78-31-04-01 787-8

TQA to TQF

Interval	Installed	Required	Procedure
N/A	24	See below	**(O) (MV)**

Up to twelve may be missing.

a. For any missing thrust reverser blocker door hinge cover the corresponding thrust reverser blocker door must also be removed and the thrust reverser must be considered inoperative.

Note: The airplane must be dispatched using MEL Item 78-31-01.

b. For each missing hinge cover (and associated removed blocker door), reduce performance limited weights by:

-------- • -------- • -------- • -------- • -------- • -------- • -------- • -------- • -------- • -------- • -------- • -------- • -------- • -------- • -------- • -------- • -------- • -------- • --------

OPERATIONS (O)

TAKE-OFF

1,497 kg

ENROUTE CLIMB

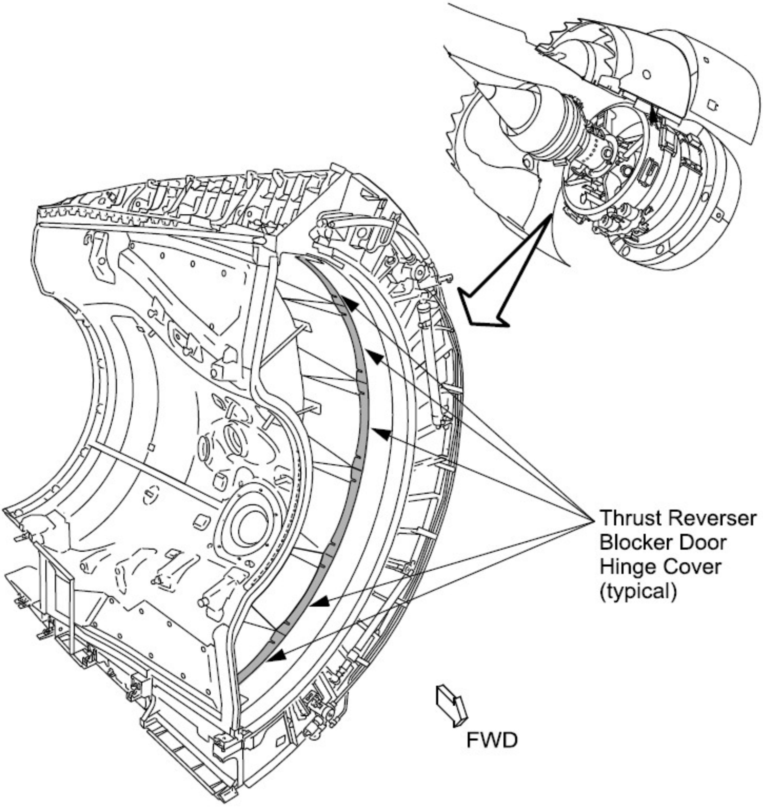
862 kg

APPROACH AND LANDING

1,021 kg

Note: Performance adjustments account for missing hinge cover and the missing blocker doors (CDL Item 78-31-01).

LOCATION


Thrust Reverser
Blocker Door
Hinge Cover
(typical)
FWD

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78-31-04 **Thrust Reverser Blocker Door Hinge Covers**

78-31-04-02 **787-9** **TWA to TWB**

Interval	Installed	Required	Procedure
N/A	24	See below	**(O) (MV)**

Up to twelve may be missing.

a. For any missing thrust reverser blocker door hinge cover the corresponding thrust reverser blocker door must also be removed and the thrust reverser must be considered inoperative.

Note: The airplane must be dispatched using MEL Item 78-31-01.

b. For each missing hinge cover (and associated removed blocker door), reduce performance limited weights by:

--------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • --------- • ---------

OPERATIONS (O)

TAKE-OFF

1,928 kg

ENROUTE CLIMB

885 kg

APPROACH AND LANDING

1,021 kg

Note: Performance adjustments account for missing hinge cover and the missing blocker doors (CDL Item 78-31-01).

LOCATION

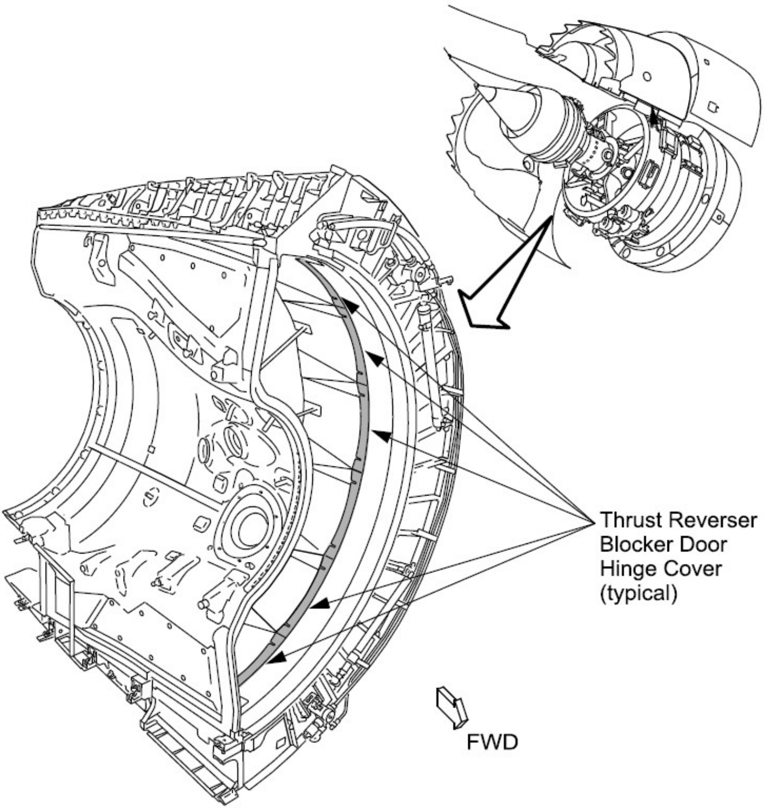
Thrust Reverser
Blocker Door
Hinge Cover
(typical)
FWD

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Table of Contents

Section 4

SPECIAL OPERATIONS .... **Section 4-1**
Table Of Contents .... **Section 4-1**
Performance Based Navigation (PBN) Information .... **Section 4-2**

Performance Based Navigation (PBN) Information

PBN Equipment Requirements

22-11-03 Flight Director Systems
RNP AR APCH operations require two Autopilot Flight Function (AFF) with auto pilot and flight director function.
RNP APCH, RNP 1/RNP 2, RNAV 1/RNAV 2, P-RNAV, B-RNAV, RNAV 5, RNP 2/RNP 4, RNP 10/RNAV 10 and Advanced RNP operations require a single Autopilot Flight Function (AFF) with auto pilot and flight director function.
27-02-02 Flight Control Module (FCM) - Air Data Reference Function
RNP AR APCH, RNP APCH, RNP 1/RNP 2, RNAV 1/RNAV 2, P-RNAV, B-RNAV, RNAV 5, RNP 2/RNP 4, RNP 10/RNAV 10 and Advanced RNP operations require a single Air Data Reference Function (ADRF). ADRF function is hosted inside each of the 3 FCMs.
31-61-01 Display Units (DU)
RNP AR APCH, RNP APCH, RNP 1/RNP 2, RNAV 1/RNAV 2, P-RNAV, B-RNAV, RNAV 5, RNP 2/RNP 4, RNP 10/RNAV 10 and Advanced RNP operations require two Primary Flight Displays (PFD) with mini map (2 outboard DUs) and two Multi-Function Display (MFD) (2 inboard DUs) .
34-21-01-01 Inertial Reference Unit (IRU) a)
RNP AR APCH, RNP APCH, RNP 1/RNP 2, RNAV 1/RNAV 2*, P-RNAV*, B-RNAV*, RNAV 5*, RNP 2/RNP 4, RNP 10/RNAV 10* and Advanced RNP operations require two Inertial Reference Unit (IRU) or one IRU and one AHRU (ref. item 34-21-01-02).
34-21-01-02 Altitude/Heading Reference Unit (AHRU) b)
RNP AR APCH, RNP APCH, RNP 1/RNP 2, RNAV 1/RNAV 2*, P-RNAV*, B-RNAV*, RNAV 5*, RNP 2/RNP 4, RNP 10/RNAV 10* and Advanced RNP operations require one Altitude/Heading Reference Unit (AHRU) and one Inertial Reference Unit (IRU) (Ref. item 34-21-01-01).
34-31-05 Global Positioning Systems (GPS) c)
RNP AR APCH, RNP APCH*, RNP 1/RNP 2*, RNP 2/RNP 4, and Advanced RNP* operations require two Global Positioning System (INR-GPS).
RNAV 1/RNAV 2, and P-RNAV, B-RNAV, RNAV5 operations require one Global Positioning System (INR-GPS).
34-33-01 Radio Altimeter Systems
RNP AR APCH operations require two Radio Altimeters.

34-33-01 Radio Altimeter Systems
No Radio Altimeter requirements for RNP APCH, RNP 1/RNP 2, RNAV 1/RNAV 2, P-RNAV, B-RNAV, RNAV 5, RNP 2/RNP 4, RNP 10/RNAV 10 and Advanced RNP operations.
34-42-05 Ground Proximity Warning System (GPWS)
RNP AR APCH operation requires one Ground Proximity Warning System (GPWS).
No GPWS requirements for RNP APCH, RNP 1/RNP 2, RNAV 1/RNAV 2, P-RNAV, BRNAV, RNAV 5, RNP 2/RNP 4, RNP 10/RNAV 10 and Advanced RNP operations.
34-42-05-03 Terrain Awareness Function
RNP AR APCH operation requires one Terrain Awareness Function.
No Terrain Awareness Function requirements for RNP APCH, RNP 1/RNP 2, RNAV 1/RNAV 2, P-RNAV, B-RNAV, RNAV 5, RNP 2/RNP 4, RNP 10/RNAV 10 and Advanced RNP operations.
34-55-01 Distance Measuring Equipment (DME)
RNAV 1/RNAV 2, and P-RNAV, B-RNAV, RNAV5 operations require one Distance Measuring Equipment (DME).
334-61-01 Flight Management Function (FMF)
RNP AR APCH, RNP APCH, RNP 1/RNP 2, RNAV 1/RNAV 2, P-RNAV, B-RNAV, RNAV 5, RNP 2/RNP 4, RNP 10/RNAV 10 and Advanced RNP operations require two Flight Management Computers (FMC). (Note: flight management computing is accomplished via FMF application S/W residing in the Common Core System (CCS)).
34-61-01-01 Flight Management Function (FMF) Navigation Databases d)
RNP AR APCH, RNP APCH, RNP 1/RNP 2, RNAV 1/RNAV 2, P-RNAV, B-RNAV, RNAV 5, RNP 2/RNP 4, RNP 10/RNAV 10 and Advanced RNP operations require a single Air Data Reference Function (ADRF). ADRF function is hosted inside each of the 3 FCMs.

a) Configuration with one IRU and one AHRU also requires one GPS (Ref. 34-31-05).
b) Configuration with one IRU and one AHRU also requires one GPS (Ref. 34-31-05).
c) Single configuration requires regulatory agency approval.
d) It is assumed that the operator has a preflight procedure to ensure that the navigation database complies with regulatory agency requirements for ensuring the navigation database remains valid for the duration of the flight unless an alternative regulatory agency approved process applies.